



AIR POLLUTION

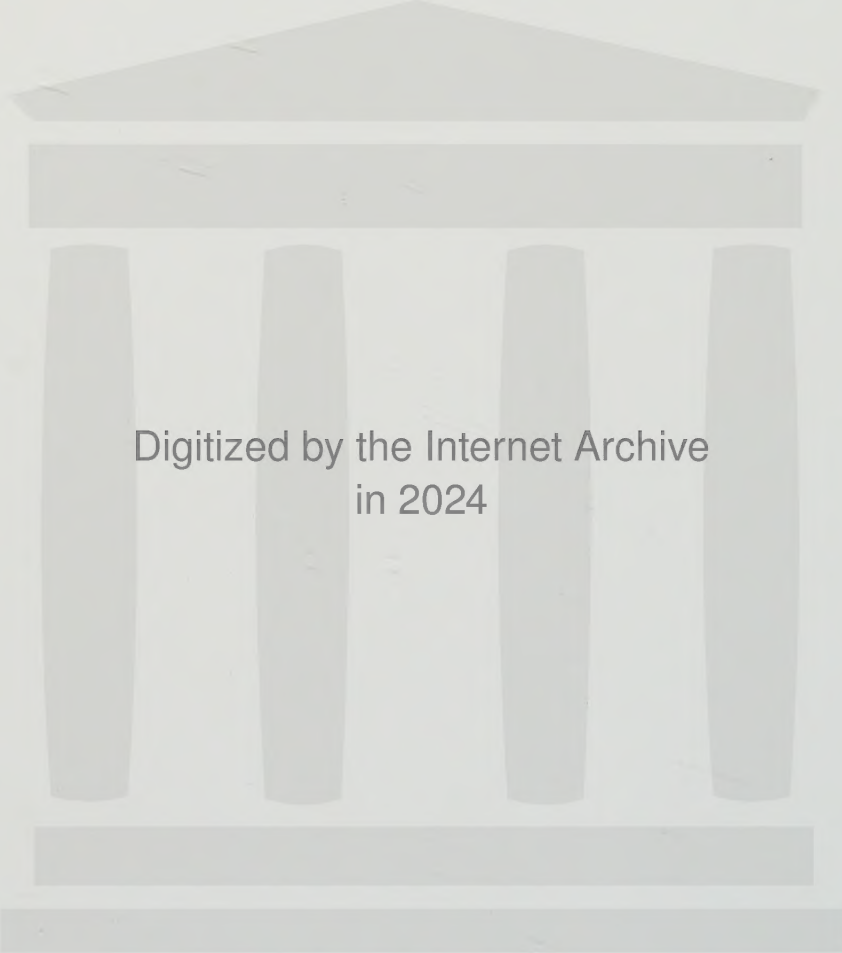


THIRD EDITION

Mark S. Squillace
David R. Wooley



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AIR POLLUTION

THIRD EDITION

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ISBN#: 1-4224-1919-3

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TABLE OF CONTENTS

Foreword	xvii
Acronyms	xix
Table of Cases	xxi
Table of Statutes and Executive Orders	xxv

DEDICATION

To our parents

Chapter 1: Dedication	1
Stephen and Carol Squillace	1
M.S.S.	1

Chapter 2: Purposes and Objectives of the Air Pollution Problem	15
John and Dale Wooley	15
D.R.W.	15

Chapter 3: Air Pollution and the Common Law	25
Public v. American Cyanamid Corp.	25
Common v. American Cyanamid Corp.	25
International Paper Company v. Oshkosh	25

PART II THE CLEAN AIR ACT

Chapter 4: The Big Picture: A Summary of the Clean Air Act	35
--	----

Chapter 5: National Ambient Air Quality Standards	71
United States v. American Cyanamid Corp.	71
Lead Industries Association v. EPA	71

Chapter 6: State Implementation Plans	93
A. Approval and Disapproval of State Implementation Plans	93
State of Texas v. EPA	93
Environmental Defense Fund v. Texas	102
B. Enforcement and Technical Assistance	102
United States v. EPA	102
C. Enforcement Action	111

TABLE OF CONTENTS

Preface	xvii
Acknowledgments	xix
Table of Cases	xxi
Table of Statutes and Regulations	xxv

PART I AN INTRODUCTION TO AIR POLLUTION

Chapter 1 Defining the Air Pollution Problem	1
National Air Quality and Emissions Trend Report, 1995	1
Chapter 2 Market Approaches to the Air Pollution Problem	15
Stavins & Whitehead, Market-Based Incentives for Environmental Protection .	15
Ackerman & Stewart, Reforming Environmental Law: The Democratic Case for Market Incentives	27
Chapter 3 Air Pollution and the Common Law	35
Boomer v. Atlantic Cement Company	35
Georgia v. Tennessee Copper Company	44
International Paper Company v. Ouellette	46

PART II THE CLEAN AIR ACT

Chapter 4 The Big Picture: A Summary of the Clean Air Act	55
Chapter 5 National Ambient Air Quality Standards	71
Natural Resources Defense Council, Inc. v. Train	71
Lead Industries Association v. EPA	77
Chapter 6 State Implementation Plans	93
A. Approval and Disapproval of State Implementation Plans	95
State of Texas v. EPA	95
Kennecott Copper Corporation v. Train	102
B. Economic and Technological Feasibility	108
Union Electronic Co. v. EPA	108
C. Nonattainment Areas	118

National Air Quality and Emissions Trend Report, 1995	118
1990 Amendments: Ozone Nonattainment Areas	122
Natural Resources Defense Council, Inc. v. EPA	124
Citizens Against Refinery's Effects, Inc. v. EPA	138
D. Nonattainment Area Plans	143
National Steel Corporation v. Gorsuch	144
State of Ohio v. Ruckelshaus	149
E. Transboundary Disputes	156
State of Connecticut v. EPA	156
Air Pollution Control District of Jefferson County, Kentucky v. EPA	168
Her Majesty the Queen in Right of Ontario v. EPA	177
F. Enforcement of State Implementation Plans	185
Natural Resources Defense Council, Inc. v. Browner	185
G. Judicial Review of State Implementation Plans	192
Kennecott Copper Corp. v. Costle	193
H. The Right to be Heard	198
Anaconda Co. v. Ruckelshaus	198
Chapter 7 Prevention of Significant Deterioration	203
Alabama Power Company v. Costle	203
Kerr-McGee Chemical Corp. v. U.S. Department of the Interior	218
Natural Resources Defense Council v. EPA	223
Visibility Protection	231
State of Vermont v. Thomas	231
Proposed Regional Haze Regulations	236
Chapter 8 Monitoring and Modeling	248
PPG Industries v. Costle	251
Cleveland Electric Illuminating Co. v. EPA	257
State of Ohio v. EPA	261
Chapter 9 Permits and Performance Standards for Stationary Sources	267
A. New Source Performance Standards	267
National Asphalt Pavement Association v. Train	267
B. New Source Review	275
Wisconsin Electric Power Company v. Reilly	276
C. The Permit Program for Stationary Sources	285
Permitting and Enforcement Under the Clean Air Act Amendments of 1990 ..	285
Western States Petroleum Association v. EPA	288
Hawaiian Electric Co. v. EPA	293
D. Hazardous Air Pollutants	299
National Mining Association v. EPA	301
Cross, Byrd & Lave, Discernable Risk—A Proposed Standard For Significant Risk in Carcinogen Regulation	311
E. The Emissions Trading Program	318
Chevron U.S.A., Inc. v. Natural Resources Defense Council	318
Emissions Trading Policy Statement; General Principles for Creation, Banking, and Use of Emission Reduction Credits	328

F. The Acid Precipitation Program	338
Acid Rain Program: General Provisions and Permits, Allowance System, Continuous Emissions Monitoring, Excess Emission and Administrative Appeals	340
American Municipal Power-Ohio v. EPA	342
Alabama Power Co. v. EPA	345
Chapter 10 Inspections and Enforcement of Stationary Sources	351
A. Inspections and Recordkeeping	351
Stauffer Chemical Co. v. EPA	351
Dow Chemical Co. v. United States	356
B. Enforcement	361
City of Seabrook v. Costle	364
Union Electric Company v. EPA	368
Sierra Club v. Public Service Company of Colorado, Inc.	372
United States v. Buckley	378
American Cyanamid Company v. EPA	381
Chapter 11 Stratospheric Ozone Depletion	391
Ozone Science	391
Montreal Protocol on Substances That Deplete the Ozone Layer, 1987	394
Significant New Alternatives Policy (SNAP)	404
OZ Technology Inc. v. EPA	408
Chapter 12 Regulation of Motor Vehicles and Fuels	413
A. Emission Standards for New Motor Vehicles	413
Natural Resources Defense Council v. Ruckelshaus	415
Natural Resources Defense Council v. EPA	419
Natural Resources Defense Council v. Reilly	429
American Automobile Manufacturers Association v. Cahill	435
Center for Auto Safety v. Ruckelshaus	444
B. Regulation of Fuels and Fuel Additives	450
Ethyl Corporation v. EPA	450
Chapter 13 Judicial Review and Rulemaking Proceedings	463
A. Petitions for Review and Rulemaking Proceedings	463
Harrison v. PPG Industries, Inc.	465
B. Citizen Suits	471
Environmental Defense Fund v. Thomas	472
Natural Resources Defense Council v. EPA	479
Chapter 14 Global Climate Change	485
“Climate Change” and “A Global Warming” Are Not the Same Thing	485
A Brief History of the Climate Change Convention United Nations Environment Program	487
Global Warming: Difficulties Assessing Countries’ Progress Stabilizing Emissions of Greenhouse Gases	492
The Kyoto Protocol on Climate Change	495
The Economics of Carbon Taxes United Nations Environment Program	499

Climate Change and Its Consequences	500
Chapter 15 Indoor Air Pollution	505
An Introduction to Indoor Air Quality	505
Regulation of Indoor Air Quality: The Last Frontier of Environmental Regulation	508
 Glossary	 519
Index	525

PREFACE

The second edition of this volume, published in 1992, explored the many new facets of air pollution law that followed from the dramatic changes to the Clean Air Act passed by Congress in 1990. As with any significant legislative overhaul, however, it was too early to see how the EPA would implement these changes, how the courts would interpret them, and how the changes would ultimately affect air quality throughout the United States.

This third edition offers a comprehensive update of air pollution law in a traditional case book format. Included in the new edition, for example, are extensive references to the new ambient air quality standards for ozone and particulate matter, new materials on stationary source standards, including the highly-regarded SO₂ emissions trading program, and excerpts from the recently approved Kyoto Protocol on Climate Change. The new edition also includes extensive references to air pollution resources available on the internet. Readers interested in exploring these resources on their own, may want to start with the home page of EPA's Office of Air and Radiation at <http://www.epa.gov/oar/>

Also new to the third edition is my co-author, David Wooley. David has been teaching environmental law and running foundation supported education/advocacy projects on air quality and energy law since 1990. Before joining the faculty at Pace, David was assistant attorney general for New York State where he specialized in air pollution litigation. He brings a wealth of practical knowledge and experience to the new edition.

Mark Squillace
Laramie, Wyoming
September, 1998

ACKNOWLEDGMENTS

The authors gratefully acknowledge the following authors and publishers who have graciously permitted them to reproduce portions of their copyrighted work.

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TABLE OF CASES

- Abbott Laboratories v. Gardner, 197, 372
 Adamo Wrecking Co. v. United States, 381, 464
Air Pollution Control District of Jefferson County, Kentucky v. EPA, 166, 168, 175-76, 337
 Air Pollution Variance Board v. Western Alfalfa Corp., 360
Alabama Power Company v. Costle, 62, 105, 107-08, 203, 215-17, 298, 326, 338
Alabama Power Company v. EPA, 346
American Automobile Manufacturers Association v. Cahill, 435, 443
American Cyanamid Company v. EPA, 381, 388
 American Lung Association v. Browner, 75
 American Lung Association v. EPA, 75-76
 American Lung Association v. Reilly, 75
 American Methyl Corporation v. EPA, 458
American Municipal Power-Ohio v. EPA, 342
 American Petroleum Institute v. Costle, 74, 87
 American Petroleum Institute v. EPA, 460
American Power Company v. EPA, 340
 Amoco Oil Co. v. EPA, 457
Anaconda Co. v. Ruckelshaus, 192, 198, 200
 Appalachian Power Co. v. EPA, 349
 Arizona v. Thomas, 101
 Ashbaker Radio Corp. v. FCC, 167
 ASARCO, Inc. v. EPA, 326
 Automotive Parts Rebuilders Association v. EPA, 448
 Bennett v. Spear, 484
 Bi-Metallic Investment Co. v. Colorado, 201
 Board of Regents v. Royal Insurance Co., 516
Boomer v. Atlantic Cement Company, 35, 40
 Bradley v. American Smelting and Refining Co., 43
 Brookline, Town of v. Gorsuch, 217
 Buckeye Power, Inc. v. EPA, 99
 Bunker Hill Co. v. EPA, 116, 355, 361
 Burbank, City of v. Lockheed Air Terminal, Inc., 42
 California ex rel. Air Resources Board v. EPA, 465
 Cate v. Transcontinental Pipeline Corp., 478
Center for Auto Safety v. Ruckelshaus, 444, 448
 Chemical Mfg. Assn. v. EPA, 284, 310
Chevron, U.S.A., Inc. v. Natural Resources Defense Council, 154, 217, 318, 326, 356, 448
 Cincinnati Gas & Electric Company v. EPA, 100, 260
Citizens Against Refinery's Effects, Inc. v. EPA, 138
 Citizens for a Better Environment v. Deukmejian, 191
 Citizens for a Better Environment v. Wilson, 191
 Citizens to Preserve Overton Park, Inc. v. Volpe, 101
 Clean Air Implementation Project v. EPA, 284, 378
Cleveland Electric Illuminating Co. v. EPA, 116, 257
 Coalition Against Columbus Center v. New York, 191, 478
 Coalition For Clean Air v. Southern California Edison Co., 191
 Connecticut Fund for the Environment v. EPA, 167

Connecticut, State of v. EPA, 156, 166-67, 175-76, 261

Continental Casualty Co. v. Sinalloy Corp., 516

Council of Commuter Organizations v. Metropolitan Transportation Authority, 363, 366

Daubert v. Merrill Dow Pharmaceuticals, Inc., 43

Delaney v. EPA, 144

District of Columbia v. Train, 192

Dow Chemical Co. v. EPA, 106

Dow Chemical Co. v. United States, 356

Drummond Coal Co. v. Watt, 464

Duquesne Light v. EPA, 388

Eisen v. Carlisle & Jacquelin, 40

Environmental Defense Fund v. EPA, 90
230

Environmental Defense Fund v. Thomas,
74, 75, 472

Essex Chemical Corporation v.
Ruckelshaus, 272

Ethyl Corp. v. Browner, 455

Ethyl Corporation v. EPA, 450, 455

Ex Parte Young, 372

Fri v. Sierra Club, 58

Friends of the Earth v. Potomac Electric
Power Co., 483

Frye v. United States, 43

General Motors Corp. v. Ruckelshaus,
449

General Motors Corp. v. United States,
190

Georgia v. Tennessee Copper Company,
44

Gwaltney of Smithfield Ltd. v.
Chesapeake Bay Foundation, 68, 363

Hadson Power 14—Buena Vista, 223

Hancock v. Train, 101

Harrison v. PPG Industries, 372, 465,
471

Hawaiian Electric Co. v. EPA, 293

Hensley v. Eckerhart, 483

Highland Park, City of v. Train, 483

Holmes Limestone, Inc. v. Andrus, 464
Houston, City of v. Gorsuch, 87

Illinois v. City of Milwaukee, 52, 167

I.N.S. v. Cardoza Fonseca, 326

International Harvester Co. v.

Ruckelshaus, 88, 428

International Paper Company v.
Ouellette, 46, 52

Kennecott Copper Corp. v. Costle, 108,
193

Kennecott Copper Corp. v. EPA, 88

Kennecott Copper Corp. v. Train, 102

Kerr-McGee Chemical Corp. v. U. S.
Department of Interior, 218, 222

Lead Industries Association, v. EPA, 77,
88

Londoner v. Denver, 201

Lubrizoil Corp. v. EPA, 457

Maine, State of v. Thomas, 236

Marshall v. Barlows, 361

McCastle v. Rollins Environmental
Services, 40

Metropolitan Washington Coalition for
Clean Air v. District of Columbia,
483

Montgomery Environmental Coalition v.
Costle, 483

Motor Vehicle Manufacturer's
Association v. EPA, 458

Motor Vehicle Manufacturer's
Association v. Ruckelshaus, 448

Motor Vehicle Manufacturer's
Association v. State Farm Insurance,
326

Nance v. EPA, 222

National Asphalt Pavement Association
v. Train, 31, 267, 274

National Mining Association v. EPA,
284, 301

National Lime Association v. EPA, 272-
74

National Wildlife Federation v. Hodel,
229

National Steel Corp. v. Gorsuch, 144,

- 148-49
Natural Resources Defense Council v. Browner, 185, 190
Natural Resources Defense Council, Inc. v. EPA, 64, 124, 216, 223, 229, 299, 419, 428, 479, 482
Natural Resources Defense Council v. Reilly, 429, 459
Natural Resources Defense Council v. Ruckelshaus, 415, 472
Natural Resources Defense Council, Inc. v. Thomas, 90, 106, 108, 419
Natural Resources Defense Council v. Train, 71, 73-74
Nebraska v. Wyoming, 167
New England Legal Foundation v. Costle, 53
New York, State of v. EPA, 166
New York, State of v. Ruckelshaus, 176
Newman v. Piggie Park Enterprises, 483
Northern Plains Resources Council v. EPA, 272
- Ohio, State of v. EPA*, 261, 465
Ohio, State of v. Ruckelshaus, 149, 154
Old Dominion Electric Cooperative, 223
Ontario, Her Majesty the Queen in Right of v. EPA, 177, 184
Ouellette v. International Paper Co., 53
OZ Technology, Inc. v. EPA, 408, 412
- Pennsauken County, New Jersey Resource Recovery Facility, In the Matter of*, 217, 218
Pennsylvania v. Delaware Valley Citizens' Council for Clean Air, 483
PPG Industries v. Costle, 251, 256
Public Service Co. of Indiana v. EPA, 360
Puerto Rican Cement Co. v. EPA, 284
- R.L. Renken v. Harvey Aluminum, Inc.*, 41
Robbins Resource Recovery Company, In the Matter of, 218
Rubanick v. Witco Chemical Corp., 43
Ruckelshaus v. Sierra Club, 363, 483
- Seabrook, City of v. Costle*, 364, 366
Sierra Club v. Costle, 273, 465
Sierra Club v. EPA, 106-08
Sierra Club v. Gorsuch, 230
Sierra Club v. Ruckelshaus, 58
Sierra Pacific Power Co. v. EPA, 272
Sierra Club v. Public Service Company of Colorado, Inc., 250, 372
Sierra Club v. Thomas, 230
Small Refinery Lead Phase-Down Task Force v. EPA, 74, 455, 465
Southwestern Pennsylvania Growth Alliance v. EPA, 154
Speciality Equipment Marketing Association v. Ruckelshaus, 448
Spur Industries, Inc. v. Del E. Webb Development Co., 40, 41
Stauffer Chemical Co. v. EPA, 351
Steel Company v. Citizens for a Better Environment, 484
Stoney Run Co. v. Prudential Commercial Insurance Co., 516
Surface Mining Regulation Litigation, In re;, 229
- T & E Industries, Inc. v. Safety Light Corporation*, 42
Texas, State of v. EPA, 95, 100, 184
Thomas v. New York, 176
Tull v. United States, 372
- Union Electric Co. v. EPA*, 87, 108, 115-17, 191, 368, 371-72, 465
Union Oil Co. of California v. EPA, 74
United States v. Buckley, 378
United States v. Causby, 41, 42
United States v. City of Painesville, 272
United States v. Ethyl Corporation, 381
United States v. Kaiser Steel Corp., 377
United States v. Louisville Edible Food Products, Inc., 381
United States v. Narragansett Improvement Co., 272
United States v. Stauffer Chemical Company, 355
United States v. Western Pacific Railroad, 197

Vermont, State of v. Thomas, 231, 236
Vermont Yankee Nuclear Power Corp. v.
Natural Resources Defense Council,
89, 101

Watt v. Alaska, 326
Western States Petroleum Association v.
EPA, 288
West Penn Power Co. v. Train, 372
Wisconsin Elec. Power, Co. v. Reilly, 63,
276, 284

TABLE OF STATUTES & REGULATIONS

Section	Page	
		§ 110(k) 190
		§ 110(k)(1)(B) 190, 382, 388
		§ 110(k)(2) 184, 190, 382, 388
		§ 110(k)(5) 184
		§ 110(n)(1) 191
		§ 111 267, 271, 273, 275, 298
		§ 111(a)(1) 40, 61, 271, 336
		§ 111(a)(1)(B) 63
		§ 111(a)(1)(C) 63, 272
		§ 111(a)(2) 272, 298
		§ 111(a)(3) 298
		§ 111(a)(4) .. 61, 63, 272, 284, 292, 298
		§ 111(b)(1)(A) 60, 271
		§ 111(b)(5) 271
		§ 111(d) 66, 272
		§ 111(d)(1) 63, 272
		§ 111(f) 275
		§ 111(h) 61
		§ 111(h)(1) 271
		§ 112 ... 64-66, 74, 217, 267, 275, 284, ... 298, 300, 381
		§ 112(a)(1) 62, 300
		§ 112(a)(2) 300
		§ 112(a)(5) 293
		§ 112(b)(1) 64
		§ 112(b)(2) 64, 299
		§ 112(b)(3) 64, 299
		§ 112(b)(3)(A) 299
		§ 112(b)(3)(B) 299
		§ 112(c) 64
		§ 112(c)(1) 299
		§ 112(c)(1)(B) 381
		§ 112(c)(3) 65
		§ 112(d)(3) 300
		§ 112(d)(3)(A) 300
		§ 112(d)(3)(B) 300
		§ 112(d)(5) 65, 300
		§ 112(e)(1)(A) 299
		§ 112(e)(1)(B) 299
		§ 112(f)(1) 64
		§ 112(i)(5) 65, 300
		§ 112(j) 293
		§ 112(j)(2) 299
Clean Air Act		
42 U.S.C. § 7409(d)(1) 74		
§ 107(d) 154-55, 205, 210, 249		
§ 107(d)(1) 155, 248		
§ 107(d)(1)(C) 154		
§ 107(d)(3) 154		
§ 107(d)(3)(E) 154		
§ 107(d)(4)(A)(iv) 138, 154		
§ 107(d)(4)(iii) 154		
§ 108(a)(1) 32, 56		
§ 108(a)(2) 56		
§ 108(f) 337		
§ 108(h) 63, 148		
§ 109(a)(2) 90		
§ 109(b) 56		
§ 109(b)(1) 88, 100, 167		
§ 109(b)(2) 88		
§ 109(d) 74, 75		
§ 109(d)(1) 75		
§ 110(a)(1) 90, 200		
§ 110(a)(2) 93, 105, 197, 246		
§ 110(a)(2)(A) 56, 101, 105		
§ 110(a)(2)(B) 105		
§ 110(a)(2)(C) 217		
§ 110(a)(2)(D) .. 45, 59, 166-167, 175, ... 215, 248, 338		
§ 110(a)(2)(D)(i)(II) 176, 235		
§ 110(a)(2)(E) 166, 175, 215		
§ 110(a)(2)(E)(i) 175		
§ 110(a)(2)(H)(ii) 100		
§ 110(a)(2)(I) 121		
§ 110(a)(2)(J) 237		
§ 110(b) 90		
§ 110(c) 94, 115, 192		
§ 110(c)(1) 191		
§ 110(e) 117		
§ 110(f) 117		
§ 110(f)(2) 117		
§ 110(g) 117		
§ 110(h) 117		

§ 112(j)(5)	299	§ 123(b)	106
§ 112(r)(3)	300	§ 126	166, 176, 338
§ 112(r)(6)	65, 300	§ 126(b)	45, 166, 235
§ 112(r)(6)(C)	301	§ 127	90
§ 112(r)(7)(B)(ii)	65	§ 129(a)(1)	275
§ 113	361, 389, 463	§ 161	215
§ 113(a)	361, 366	§§ 161-169	176
§ 113(a)(1)	361, 366, 377	§§ 162-165	58
§ 113(a)(1)(C)	371	§ 162	221
§ 113(a)(2)	362	§ 162(a)	237
§ 113(a)(3)	362	§ 163(b)(3)	58
§ 113(a)(4)	361	§ 164	58, 221
§ 113(a)(5)	362	§ 164(a)	58
§ 113(b)	67-68, 361-63, 366, 372	§ 164(a)(2)(B)	222
§ 113(c)	363, 381	§ 164(c)	222
§ 113(c)(2)	292	§ 164(e)	222
§ 113(d)	361	§ 165	59, 93, 215, 217, 293
§ 113(d)(1)	362	§ 165(a)(3)	62, 298
§ 113(d)(1)(B)	292	§ 165(a)(4)	40, 217, 298
§ 113(d)(2)	362	§ 165(a)(7)	216
§ 113(d)(3)	68, 362	§ 165(d)	248, 298, 338
§ 113(d)(4)	68	§ 165(d)(2)(A)	222
§ 113(d)(5)	68	§ 165(d)(2)(B)	59, 222
§ 113(e)	68, 362	§ 165(d)(2)(C)(i)	222
§ 113(e)(1)	377	§ 165(d)(2)(C)(ii)	59, 222
§ 113(f)	68, 292, 362	§ 165(d)(2)(C)(iii)	59, 222
§ 114	68, 250, 389	§ 165(d)(2)(C)(iv)	222
§ 114(a)	351	§ 165(d)(2)(D)(i)	222
§ 114(a)(1)	249, 356	§ 165(d)(2)(D)(ii)	222
§ 114(a)(2)	67, 351	§ 165(e)	62
§ 114(a)(3)	67, 249, 292, 356, 363	§ 165(e)(1)	216
§ 114(b)	360	§ 165(e)(2)	58, 216
§ 114(c)	355	§ 166(a)	58, 230
§ 114(d)(1)	360	§ 166(d)	230
§ 114(f)	484	§ 167	284
§ 115	176, 184, 338	§ 169(a)	298
§ 115(a)	184	§ 169(1)	61-62, 216-217, 248, 298
§ 115(b)	184	§ 169(3)	62, 336
§ 116	53, 272, 284	§ 169(4)	58
§ 118	101	§ 169A	62, 237, 238, 241, 338
§ 119	197, 463	§ 169A(a)(1)	236, 246
§ 119(b)(3)	197	§ 169A(a)(4)	246
§ 120	26, 67-68, 361-63, 388-89,	§ 169A(b)	241
.....	463	§ 169A(b)(2)	235, 248
§ 120(a)(2)(A)	362	§ 169A(b)(2)(A)	235
§ 120(d)	362	§ 169A(d)	248
§ 120(d)(2)(a)	26	§ 169A(g)(2)	235
§ 120(f)	362	§ 169A(g)(7)	298
§ 123	105-07	§ 169B	237-38, 241

§ 169B(a)	59	§ 182(a)(4)	122
§ 169B(a)(1)	247	§ 182(b)	57, 122, 192
§ 169B(b)	247	§ 182(b)(2)	122
§ 169B(c)	59, 248	§ 182(b)(3)	122
§ 169B(c)(1)	247	§ 182(b)(5)	122
§ 169B(c)(2)	247	§ 182(c)	57, 62, 122
§ 169B(d)	59, 241, 247	§ 182(c)(1)	122
§ 169B(e)(1)	238	§ 182(c)(3)	123, 133
§ 169B(e)(2)	241	§ 182(c)(3)(B)	138
§ 169B(f)	238, 247	§ 182(c)(4)	123
§ 171(1)	57	§ 182(c)(7)	123, 293
§ 171(3)	57, 62, 143, 336	§ 182(c)(8)	293
§ 171(4)	63, 284, 292	§ 182(d)	57, 123, 143
§ 172	143, 336, 338	§ 182(e)	57, 123
§ 172(a)(2)(A)	143	§ 182(e)(1)	123
§ 172(a)(2)(C)	143	§ 182(e)(2)	123, 293
§ 172(b)	143	§ 182(g)	123, 143
§ 172(b)(2)	148	§ 182(g)(3)	337
§ 172(b)(3)	148	§ 182(g)(4)	123
§ 172(b)(6)	298	§ 182(g)(5)	337
§ 172(c)(1)	57, 121, 142, 148	§ 183	148
§ 172(c)(2)(A)	144	§ 184(a)	138
§ 172(c)(8)	100	§ 184(b)(1)(A)	133, 138
§ 172(c)(9)	143	§ 185(a)	123
§ 172(c)(i)	116	§§ 186-192	121
§ 173	59, 62, 93, 293, 338	§ 186(a)(1)	143
§ 173(2)	336	§ 186(a)(4)	144
§ 173(a)(1)	62, 123	§ 187(c)(10)	123
§ 173(a)(1)(A)	142-143	§ 187(d)	143
§ 173(a)(2)	57	§ 187(d)(3)	337
§ 173(c)(1)	143	§ 187(g)	337
§ 173(d)	148	§ 188(c)	143
§ 176(a)	121	§ 188(d)	144
§ 176A	138, 175	§ 188(e)	143
§ 176A(a)	138	§ 189(c)	143
§ 177	414	§ 191	57
§ 178	148	§ 192	57
§ 179	149, 185	§ 192(a)	143
§ 179(a)	149, 185	§ 202	40, 73, 413
§ 179(b)	149, 185	§ 202(a)	413
§ 181	121	§ 202(a)(1)	413, 427-28
§§ 181-185B	121	§ 202(a)(2)	413-14
§ 181(a)	57	§ 202(a)(6)	414, 459
§ 181(a)(1)	122, 143	§ 202(1)	90
§ 181(a)(5)	143	§ 202(d)(1)	69, 413
§ 182(a)(2)	123	§ 202(f)	449
§ 182(a)(2)(A)	122	§ 202(g)	414
§ 182(a)(2)(B)(i)	122	§ 202(i)	414
§ 182(a)(2)(C)	122	§ 202(i)(2)(B)	414

§ 202(j)	415
§ 202(k)	415, 459
§ 202(l)(1)	415
§ 202(l)(2)	415
§ 202(m)	415
§ 203(a)(1)	414
§ 206(a)(1)	414
§ 206(a)(2)	414
§ 206(b)	414
§ 206(b)(2)	414
§ 206(f)	449
§ 206(g)	69
§ 206(g)(1)	414
§ 206(h)(2)	414
§ 207(a)(2)	448
§ 207(c)(1)	414
§ 207(c)(4)(C)	413
§ 207(c)(5)(C)	413
§ 207(c)(6)(C)	413
§ 207(i)	448
§ 209(a)	414
§ 211	69, 73
§ 211(a)	69, 457
§ 211(a)(1)(A)	456
§ 211(a)(1)(B)	457
§ 211(b)	457
§ 211(b)(2)(A)	457
§ 211(c)	458
§ 211(c)(1)(A)	455
§ 211(d)(1)	458
§ 211(e)	458
§ 211(f)	458
§ 211(f)(1)(B)	458
§ 211(f)(2)	458
§ 211(f)(4)	458
§ 211(h)	460
§ 211(i)	461
§ 211(k)	460
§ 211(k)(3)	460
§ 211(k)(9)(D)	460
§ 211(m)	460
§ 211(m)(2)(B)	461
§ 211(n)	413, 456
§ 218(b)	415
§ 218(c)	415
§ 219	69
§ 231	449
§ 232(a)	449
§ 246	415

§ 246(b)	415
§ 302(b)	88
§ 302(d)	363
§ 302(j)	61-62, 216, 298
§ 303	361, 363
§ 304	74, 197, 363, 463, 471, 478, 482-83
§ 304(a)	65, 482
§ 304(a)(1)	68, 191, 363, 471, 484
§ 304(a)(2)	74-75, 363, 471-72
§ 304(a)(3)	363, 471, 484
§ 304(b)	483
§ 304(c)	363
§ 304(e)	53
§ 304(f)(3)	191
§ 304(g)(2)	484
§ 306(a)	68
§ 307	75, 285, 464, 482-83
§ 307(b)	75, 192, 336, 482-83
§ 307(b)(1)	74, 115, 197, 273, 463-64, 471-72, 482
§ 307(c)	464
§ 307(d)	73, 99, 464
§ 307(d)(1)(L)	448
§ 307(d)(2)	73, 464
§ 307(d)(3)	74, 465
§ 307(d)(4)	464
§ 307(d)(5)	465
§ 307(d)(6)	465
§ 307(d)(6)(B)	74, 465
§ 307(d)(6)(C)	74, 101
§ 307(d)(7)	74, 464
§ 307(d)(8)	74, 465
§ 307(d)(9)	100, 273, 448, 465
§ 307(f)	483
§ 316	149
§ 319	256
§ 401(b)	90
§ 402(1)	339
§ 402(2)	339
§ 402(3)	339
§ 402(7)	249
§ 403(c)	67
§ 404	66, 372
§ 405(b)	372
§ 405(d)	67
§ 406	67
§ 407(b)(1)	67
§ 407(b)(2)	67

§ 407(c)	67, 273
§ 408	293
§ 410	389
§ 410(f)	346
§ 411(a)	67
§ 412(a)	60, 67, 249
§ 412(c)	249
§ 501(2)	292
§ 502	248, 292
§ 502(a)	53, 60, 292
§ 502(b)	53, 60
§ 502(b)(2)	292
§ 502(b)(3)	60
§ 502(b)(3)(A)	292
§ 502(b)(3)(B)	292
§ 502(b)(9)	60
§ 502(b)(10)	293
§ 502(c)	53
§ 503	59-60, 248
§ 504	250
§ 504(b)	60, 249, 250, 292
§ 504(c)	292, 478
§ 504(d)	59-60
§ 504(f)	60, 292, 389
§ 505(b)	292
§ 505(b)(2)	60, 285, 292
§ 505(c)	60, 292
§ 601(1)	403
§ 604	403
§ 605	403
§ 606(a)	403
§ 608	403
§ 610	403
§ 610(d)	403
§ 611	403
§ 612	403
§ 612(d)	412
§ 614(b)	403

Administrative Procedure Act

5 U.S.C. § 551	73
5 U.S.C. § 551(4)	336
5 U.S.C. § 552	73
5 U.S.C. § 553	73-74, 464
5 U.S.C. § 553(e)	464
5 U.S.C. § 555(b)	191
5 U.S.C. § 701	463
5 U.S.C. § 702	463

5 U.S.C. § 704	336
5 U.S.C. § 706	463
5 U.S.C. § 706(1)	191
5 U.S.C. § 706(2)(A)-(D)	100

7 U.S.C.

7 U.S.C. § 6701(a)	494
--------------------------	-----

28 U.S.C.

28 U.S.C. § 1331	463
------------------------	-----

Clean Water Act

33 U.S.C. §§ 1251 <i>et seq.</i>	482
§ 402 [33 U.S.C. § 1342]	292
§ 505(e) [33 U.S.C. § 1365(e)]	53

Emergency Planning and Community Right-to-Know Act of 1986

42 U.S.C. §§ 11001-11050 ...	310, 484
42 U.S.C. §§ 11001 <i>et seq.</i> ...	310, 484
42 U.S.C. § 11002	310
42 U.S.C. § 11021(a)(1)	310
42 U.S.C. § 11046(a)(1)	484

Energy Supply and Environmental Coordination Act

15 U.S.C. § 793(c)(1)	101
-----------------------------	-----

Federal Hazardous Substances Act

15 U.S.C. §§ 1261 <i>et seq.</i>	
--	--

National Climate Program Act

15 U.S.C. § 2901	494
------------------------	-----

National Energy Policy Plan

42 U.S.C. § 13388(a)	494
42 U.S.C. § 13388(c)	494

Surface Mining Control and Reclamation Act

30 U.S.C. §§ 1251 <i>et seq.</i>	482
§ 515(b)(4)	229
§ 517	360
§ 520	484

§ 702	229
-------------	-----

40 C.F.R.

§ 50.4	74, 76, 176
§ 50.4(b)	260
§ 50.5	74, 176
§ 50.9	74
§ 50.11	74
§ 50.12	74
§ 51.100(o)	63, 336
§ 51.100(s)	100
§ 51.100(hh)	106
§ 51.100(ii)	106
§ 51.100(nn)	106
§ 51.118	106
§ 51.119	106
§ 51.160-166	275
§ 51.165	63
§ 51.165(a)(1)(x)	63
§ 51.166	63
§ 51.166(b)(21)(iv)	284
§ 51.166(b)(21)(v)	284
§ 51.166(b)(23)	63
§ 51.166(b)(40)	223
§ 51.166(b)(41)	223
§ 51.166(j)	218
§ 51.166(p)(4)(i)	223
§ 51.166(p)(5)	223
§ 51.166(p)(6)(iii)	223
§ 51.212	377
§§ 51.300-51.307	238
§ 51.300(a)	246
§ 51.301(n)	236
§ 51.301(s)	237
§ 51.301(x)	245
§ 51.304(c)	236
§ 51.306(a)(1)	245
§ 51.306(c)	245
§ 51.307	59
§ 52.12	377
§§ 52.21-52.24	275
§ 52.21	58
§ 52.21(b)(2)	298
§ 52.21(b)(21)(iv)	284
§ 52.21(b)(21)(v)	284
§ 52.21(j)	218
§ 52.24(f)(13)(iv)	284
§ 52.24(f)(13)(v)	284

§ 52.31(d)(1)	185
§ 52.31(d)(6)	185
§ 52.33	377
§ 58.1	256
§ 58.1(p)	256
§ 58.20	256
§ 58.40	256
§ 60.2	272
§ 60.8(c)	272
§ 60.11	377
§ 60.11(d)	272, 378
§ 60.12	377
§ 60.14	272
§ 60.14(h)	284
§ 60.15	272
§ 60.43a(a)	65, 67
§ 60.57(b)	271
§ 60.192	63, 271
§ 60.530	25
§ 66.95(c)	363, 383
§ 75.10	249
§ 76.16	349
§ 80.22(a)	457
§ 80.24	457
§ 80.24(b)	457
§ 80.27(a)(2)	460
§ 81.400 <i>et seq.</i>	235
§ 82.178	412
§ 82.180	412
§ 82.180(a)(7)	412
§ 86.087-8(g)	25, 449
§ 86.090-25(b)	428
§ 86.090-25(b)(4)(i)(F)	428
§ 86.090-25(b)(4)(ii)(D)	428
§ 86.090-25(b)(4)(iii)(D)	428
§ 86.090-25(b)(6)(i)(F)	428
§ 86.094-25(b)(4)(iii)(D)	428
§ 86.094-25(b)(4)(iv)(D)	428
§ 86.094-25(b)(6)(i)(G)	428
§ 87.11	449
§ 87.31	449
§ 124.4	217
§ 124.10(b)	217
§ 124.19	217
§ 124.19(a)	217
Part 9	404
Part 50	56
Part 51	93, 236, 245
Part 51, Subpart I	275

Part 51, Subpart U	337
Part 51, Appendices A-W	265
Part 51, Appendix W	257, 261
Part 52	117
Part 58, Appendix D	256
Part 60	60, 271, 298
Part 60, Subpart N	60
Part 60, Subpart P	60
Part 60, Subpart R	61
Part 60, Subpart Y	60
Part 63	298, 300
Part 64	249
Part 66	363
Part 66, Subpart J	363
Part 67, Appendices A-C	388
Part 70	59, 249, 292
Part 71	249
Part 72	340
Part 73	340
Part 75	340
Part 77	340
Part 78	340
Part 79	458
Part 80, Subpart D	460
Part 81, Subpart D	59, 237
Part 82	404
Part 82, Subpart A	403
Part 82, Subpart B	403
Part 82, Subpart C	403
Part 82, Subpart E	403
Part 85, Subpart V-W	448
Part 86	413
Part 87	449

40 Fed. Reg.	
52,011	457
56,768	464

42 Fed. Reg.	
63,080	87

43 Fed. Reg.	
8963	215

45 Fed. Reg.	
59,331	116
80,084	247

46 Fed. Reg.	
20,551	142
20,552	142

47 Fed. Reg.	
15,083	336
58,462	449

48 Fed. Reg.	
3382	121
7392	449
7393	449
48,598	449

49 Fed. Reg.	
3010	428
3010-11	428
20,647	247
48,152	176

50 Fed. Reg.	
10,606	419
35,388	419

51 Fed. Reg.	
43,814	65, 142, 328, 336
43,831	142
43,835	142
43,836	142

52 Fed. Reg.	
27,849	336
31,275	459
31,278	460
31,279	460

53 Fed. Reg.	
5860	25
40,656	230

56 Fed. Reg.	
2760	284
34,202	218
49,548-01	403
50,172	247
57,522	241
57,523	241

57 Fed. Reg.

5321	217
31,576	299
31,591	298, 310
31,592	310
32,250	60, 293
32,314	276
32,317	284

58 Fed. Reg.

3590	340
27,283	415
51,735	34
63,491	299
63,941	299

59 Fed. Reg.

4478	300
13,044	404
16,690	337
16,691	337
58,962	75

60 Fed. Reg.

66,706	367
66,710-12	367

61 Fed. Reg.

25,566-25,580	75
38,250	218
38,273	218
38,282	218
38,287	223
38,288	223
38,290	223
38,332	223
52,941	415
53,026	363
57,775	337
65,638	76
65,716	76
68,383	284
68,388	284
67,112	349

62 Fed. Reg.

8314	250, 377
33,625	415
36,947	273
38,652	56, 76, 239
38,856	122, 155
41,138	236
41,139	246
41,145	247
41,157	247
41,158	246
41,159	246
54,900	249
54,902	250

63 Fed. Reg.

926	444
11,374	444

I

AN INTRODUCTION TO AIR POLLUTION

1 DEFINING THE AIR POLLUTION PROBLEM

Numerous air pollutants have the potential to adversely affect public health and welfare. Federal regulatory programs have focused most heavily, however, on the six air pollutants which have historically caused the most significant health problems, and which have proved difficult to regulate because they result from so many diverse sources. For these six pollutants, the EPA has established National Ambient Air Quality Standards (NAAQS). The procedures for setting those standards is described in detail in Chapter 5, *infra*. Set forth below is a summary of the EPA's most current information regarding these six pollutants, and the efforts that have been made for their control.

NATIONAL AIR QUALITY AND EMISSIONS TREND REPORT, 1995 EPA/R-96-005 (October, 1996)

EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants to protect public health and welfare. These six pollutants are carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter whose aerodynamic size is less than or equal to 10 microns (PM-10), and sulfur dioxide (SO₂). Table 2-1 lists the NAAQS for each pollutant in terms of the level of the standard, the associated averaging time, and the form of the statistic used to evaluate compliance. There are primary standards for all of the criteria pollutants. Some pollutants (PM-10 and SO₂) have primary standards for both long-term (annual average) and short-term (24 hours or less) averaging times. Short-term standards are established to protect people from any adverse health effects associated with acute exposure to air pollution, while long-term standards are established to protect the population from any adverse health effects associated with chronic exposure to air pollution. The secondary standard, which protects public welfare (vegetation, materials, and visibility), is the same as the primary standard for most pollutants, with the exception of SO₂.

Table 2-1. NAAQS in Effect in 1995

Pollutant	PRIMARY (HEALTH RELATED)		SECONDARY (WELFARE RELATED)	
	Type of Average	Standard Level Concentration	Type of Average	Standard Level Concentration
CO	8-hour	9 ppm; (10 $\mu\text{g}/\text{m}^3$)	No Secondary Standard	
	1-hour	35 ppm; (40 $\mu\text{g}/\text{m}^3$)	No Secondary Standard	
Pb	Maximum Quarterly Average	1.5 $\mu\text{g}/\text{m}^3$	Same as Primary Standard	
NO ₂	Annual Arithmetic Mean	0.053ppm (100 $\mu\text{g}/\text{m}^3$)	Same as Primary Standard	
O ₃	Maximum Daily 1-hour Average	0.12 ppm (235 $\mu\text{g}/\text{m}^3$)	Same as Primary Standard	
PM-10	Annual Arithmetic Mean ^d	50 $\mu\text{g}/\text{m}^3$	Same as Primary Standard	
	24-hour ^d	150 $\mu\text{g}/\text{m}^3$	Same as Primary Standard	
SO ₂	Annual Arithmetic Mean	0.030 ppm; (80 $\mu\text{g}/\text{m}^3$)	3-hour ^b	0.50 ppm; (1300 $\mu\text{g}/\text{m}^3$)
	24-hour ^b	0.14 ppm; (365 $\mu\text{g}/\text{m}^3$)		

^a Parenthetical value is an approximately equivalent concentration.

^b Not to be exceeded more than once per year.

^c The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is equal to or less than one, as determined according to Appendix H of the Ozone NAAQS.

^d Particulate standards use PM-10 as the indicator pollutant. The annual standard is attained when the expected annual arithmetic mean concentration is less than or equal to 50 $\mu\text{g}/\text{m}^3$, the 24-hour standard is attained when the expected number of days per calendar year above 150 $\mu\text{g}/\text{m}^3$ is equal to or less than one, as determined according to Appendix K of the PM NAAQS.

[Editor's note: The standards for ozone and particulate matter were amended on July 18, 1997. 62 Fed. Reg. 38,652, 38,856 (1997) The previous standards were essentially retained though the methods for calculating violations were modified slightly. In addition, however, new standards were added. The new standard for ozone is an 8-hour, 0.08 ppm standard based on a three year average of the 4th highest daily maximum 8-hour average at each monitor in an area. Two new particulate matter standards focus on particles less than 2.5 microns in size. The first is a PM_{2.5} standard of 15 $\mu\text{g}/\text{m}^3$, 3-year average, annual arithmetic mean. The second is a PM_{2.5} standard of 65 $\mu\text{g}/\text{m}^3$, 3-year average of the 98th percentile of the 24-hour PM_{2.5} concentrations at each population-oriented monitor in an area.]

CARBON MONOXIDE (CO)

I. Air Quality Concentrations	
1986-95	37% decrease
1994-95	10% decrease
II. Emissions	
1986-95	16% decrease
1994-95	7% decrease

Nature and Sources

CO is a colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely. It is a product of motor vehicle exhaust, which contributes about 60 percent of all CO emissions nationwide. In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. These emissions can result in high concentrations of CO, particularly in areas with heavy traffic congestion. Other sources of CO emissions include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak CO concentrations typically occur during the colder months of the year when CO automotive "cold start" emissions are greater and nighttime inversion conditions are more frequent. Despite an overall downward trend in concentrations and emissions of CO, six metropolitan areas failed to meet the CO NAAQS in 1995.

Health Effects

CO enters the bloodstream and reduces oxygen delivery to the body's organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. At higher levels of exposure, healthy individuals are also affected. Visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, and difficulty in performing complex tasks are all associated with exposure to elevated CO levels. There are two primary NAAQS for ambient CO, a 1-hour average of 35 ppm and an 8-hour average of 9 ppm. These standards cannot be exceeded more than once per year.

Trends

Long-term improvements continued between 1986 and 1995. Figure 2-1 indicates that national average CO levels decreased 37 percent during the past 10 years as measured by the composite average of the annual second highest 8-hour concentration. These reductions in ambient CO levels occurred despite a 31 percent increase in vehicle miles traveled. Nationally, the composite average of exceedances of the CO NAAQS declined 95 percent since 1986. The large difference between the rate of change in concentrations and the percentage change in exceedances is due to the nature of the exceedance statistic (which is simply a count of a pass/fail indicator).

National total CO emissions decreased 16 percent since 1986. Because the urban CO monitoring network is primarily mobile-source oriented, the national CO air quality decrease of 37 percent more closely tracks the estimated 20 percent reduction in highway vehicle emissions.

LEAD (Pb)

III. Air Quality Concentrations	
1986-95	78% decrease
1994-95	no change
IV. Emissions	
1986-95	32% decrease
1994-95	1% decrease

Nature and Sources

In the past, automotive sources were the major contributor of lead emissions to the atmosphere. As a result of EPA’s regulatory efforts to reduce the content of lead in gasoline, the contribution from the transportation sector has declined. Today, smelters and battery plants, followed by highway vehicles, are the major sources of lead emissions to the atmosphere. The highest concentrations of lead are found in the vicinity of nonferrous smelters and other stationary sources of lead emissions.

Health Effects

Exposure to lead mainly occurs through the inhalation of air and the ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues. Because it is not readily excreted, lead can also affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and/or behavioral disorders. Even at low doses, lead exposure is associated with changes in fundamental enzymatic, energy transfer, and homeostatic mechanisms in the body. At low doses, fetuses and children often suffer from central nervous system damage. Recent studies show that lead may be a factor in high blood pressure and subsequent heart disease. The primary NAAQS for lead is a quarterly average concentration not to exceed 1.5 µg/m³.

Trends

* * *

[B]etween 1986 and 1985, maximum quarterly average lead concentrations decreased 78 percent; figures show that total lead emissions decreased 32 percent. These reductions are a direct result of the phase-out of leaded gasoline. Air quality trends at urban and suburban locations over this 10-year period appear to be quite similar, which is not surprising since highway vehicles are the major source of emissions at both of these locations. * * * [H]ighway vehicles accounted for 95 percent of the 10-year lead emissions decline.

* * *

NITROGEN DIOXIDE (NO₂)

V. Air Quality Concentrations

1986-95 14% decrease

1994-95 5% decrease

VI. Emissions

1986-95 3% decrease

1994-95 8% decrease

Nature and Sources

NO₂ belongs to a family of poisonous, highly reactive gases called oxides of nitrogen (NO_x). These gases form when fuel is burned at high temperatures, and come principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A suffocating, brownish gas, NO₂ is a strong oxidizing agent that reacts in the atmosphere to form corrosive nitric acid. It also plays a major role in the atmospheric reactions that produce ozone.

Health and Other Effects

NO₂ can irritate the lungs and lower resistance to respiratory infections such as influenza. The effects of short-term exposure are still unclear, but continued or frequent exposure to concentrations higher than those normally found in the ambient air may cause increased incidence of acute respiratory disease in children. The ambient NO₂ primary NAAQS is an annual mean concentration not to exceed 0.053 ppm. Oxides of nitrogen are an important precursor to both ozone and acidic precipitation (acid rain) and may affect both terrestrial and aquatic ecosystems. The regional transport and deposition of nitrogenous compounds arising from emissions of NO₂ is a potentially significant contributor to such environmental effects as the growth of algae and subsequent unhealthy or toxic conditions for fish in the Chesapeake Bay and other estuaries. In some parts of the western United States, oxides of nitrogen have a significant impact on particulate matter concentrations.

Trends

Nationally, annual mean NO₂ concentrations remained relatively constant throughout the 1980s, followed by decreasing concentrations in the 1990s. The 1995 composite average of the NO₂ annual mean concentrations is 14 percent lower than the 1986 level, and five percent lower than the 1994 level. * * *

* * * Between 1986 and 1995, national total NO₂ emissions decreased 3 percent. However, between 1994 and 1995 emission decreased 8 percent. Title IV (Acid Deposition Control) of the 1990 CAAA specifies that between 1980 and 2010 total annual NO_x emissions will be reduced by approximately 10 percent (a reduction of 2 million tons). Although NO_x emissions are not affected by Title IV until 1996, Reasonably Available Control Technology (RACT) conditions must be met by 1995. Thus, low NO_x burners were often installed before the required date and are reflected in NO_x emissions declines between 1994 and 1995. In 1995, the two primary sources of the NO_x emissions were fuel combustion (46 percent) and transportation (49 percent). * * *

* * *

OZONE (O₃)

VII. Air Quality Concentrations		
1986-95	6% decrease	
1994-95	4% decrease	
VIII. VOC Emissions		
1986-95	9% decrease	
1994-95	2%	

Nature and Sources

Ground-level O₃ is the most complex, difficult to control, and pervasive of the six criteria pollutants. Unlike other pollutants, O₃ is not emitted directly into the air by specific sources. A poisonous form of pure oxygen, it is created when sunlight reacts with NO_x and VOCs in the air. There are thousands of sources of these gases. Some of the more common sources are gasoline vapors, chemical solvents, combustion products of various fuels, and consumer products. These products can be frequently found in large industrial facilities, gas stations, and small businesses such as bakeries and auto body repair shops. Often these “precursor” gases are emitted in one area, but the actual chemical reactions, stimulated by sunlight and temperature, take place in another. Combined emissions from motor vehicles and stationary sources can be carried hundreds of miles from their origins, forming high O₃ concentrations over very large regions. Approximately 70 million people lived in 108 counties with air quality levels above the primary O₃ NAAQS in 1995. Los Angeles has the highest number of exceedances of the O₃ NAAQS followed by Houston, then metropolitan areas in California and the Northwest.

Health and Other Effects

While O₃ in the upper atmosphere is beneficial in that it shields the earth from harmful ultraviolet rays, ground-level O₃ causes health problems because it damages lung tissue, reduces lung function, and sensitizes the lungs to other irritants. Scientific evidence indicates that ambient levels of O₃ not only affect people with impaired respiratory systems (such as asthmatics) but healthy adults and children as well. Exposure to O₃ for six to seven hours, even at relatively low concentrations, has been found to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during periods of moderate exercise. This decrease in lung function is often accompanied by such symptoms as chest pain, coughing, nausea, and pulmonary congestion. Recent studies provide evidence of an association between elevated ambient O₃ levels and increases in hospital admissions for respiratory problems in several U.S. cities. Though less well established in humans, animal studies have demonstrated that repeated exposure to O₃ over a period of months or years can produce permanent structural damage in the lungs and accelerate the rate of lung function decline and the aging of lungs.

Ambient O₃ is also responsible for 1 to 2 billion dollars of agricultural crop yield loss in the United States each year. Because ground-level ozone interferes with the ability of plants to produce and store food, plants are more susceptible to disease, insect attack, other environmental pollutants, and harsh weather, resulting in, for example, yield loss in crops and biomass loss in tree seedlings.

Ozone also damages the foliage of trees and other plants, decreasing the beauty of our national parks and recreation areas, and has an impact on wildlife. For example, O₃ effects can reduce the ability of affected areas to provide habitats to endangered as well as other species. In an example affecting a common species, milkweed, long known for its sensitivity to O₃ and usefulness as an indicator species of elevated O₃ levels, is the sole food of the monarch butterfly larvae. Thus, a major risk associated with the loss of milkweed foliage for a season is that it might have significant indirect effects on the local monarch butterfly population.

Since 1986, over 3,000 new studies have been published on the health and ecological effects of ambient ozone. Many of these studies indicate that negative effects occur at levels lower than the current ambient standard for ozone. The current standard for O₃ is 0.12 ppm daily maximum 1-hour concentration, not to be exceeded more than once per year averaged over three calendar years.

EPA is currently reviewing the NAAQS for O₃ in accordance with the requirements of the Clean Air Act. The NAAQS for particulate matter is also currently under review (see the PM-10 section of this chapter) and the Agency plans to complete these reviews and propose decisions on whether to retain or revise both NAAQS by November 29, 1996, with final action planned for June 1997. EPA is considering the recommendation of the Clean Air Science Advisory Committee (CASAC) "that the present 1-hour standard be eliminated and replaced with an 8-hour standard."

Trends

Ground level O₃ (the primary constituent of smog) has remained a pervasive pollution problem throughout the United States. Ambient O₃ trends are influenced by year-to-year changes in meteorological conditions, population growth, and VOC to NO_x ratios as well as changes in emissions from ongoing control measures. Meteorological conditions in 1995 were highly conducive to peak O₃ formation, especially in the Midwest and Gulf states and throughout the East. Nationally, 1995 was the thirty-third hottest summer in the last 100 years, while 1988 was the third hottest. On a regional basis, the Northeast experienced its third hottest summer, while the Central states had the eleventh hottest summer. * * * [T]he 1995 composite national average daily maximum 1-hour O₃ concentration is 6 percent lower than the 1986 composite mean level. The national 1995 composite mean is 4 percent higher than the previous year and the same as the composite level recorded in 1990. The lowest national composite mean level was recorded in 1992 and the highest in 1988. The composite mean of the number of exceedances of the O₃ NAAQS declined 53 percent since 1986. In contrast to the trend in concentrations, the composite mean of the number of exceedances declined 6 percent between 1994 and 1995, primarily as a result of the 24-percent reduction in the number of exceedances at sites in California.

* * *

As noted in a study by the National Academy of Science, and in previous Trends Reports, O₃ trends are affected by changing meteorological conditions that are conducive to O₃ formation. EPA has developed a statistical model that attempts to factor out meteorological effects and helps to normalize the resulting trend estimates across years.

* * *

While the raw data trends reflect the year-to-year variability in ozone conducive conditions, the meteorologically adjusted O₃ trend provides a more stable indicator of O₃

trends. For these 44 metropolitan areas, the adjusted trend shows continued improvement with an average decrease of about 1 percent per year since 1986.

* * *

* * * [E]missions of VOCs (which contribute to O₃ formation) decreased 9 percent between 1986 and 1995. Recent control measures to reduce emissions include regulations to lower fuel volatility as well as NO_x and VOC emissions from tailpipes. These measures are reflected in the 23 percent decrease in emissions from transportation sources, and the 31 percent decline in highway vehicle emissions. NO_x emissions (the other major precursor to O₃ formation) decreased 3 percent between 1986 and 1995. Nationally, the two major sources of VOC emissions are industrial processes (58 percent) and transportation sources (37 percent) * * *

* * *

Because detailed ambient air quality data is useful in understanding the air quality problems of a particular area, the 1990 CAAA called for improved monitoring of ozone and its precursors, VOC and NO_x. Photochemical Assessment Monitoring Stations (PAMS) were therefore developed and positioned in all ozone nonattainment areas classified as serious, severe, or extreme. The 22 affected areas collect measurements of ozone, NO_x, and a number of VOCs as well as surface and upper air meteorology. While the hot dry summer in 1995 resulted in increases in ozone levels in many parts of the country between 1994 and 1995, the majority of the PAMS sites showed decreases in the concentrations of toxics and ozone-forming VOCs. Under more normal summertime conditions, meteorological conditions such VOC reductions would likely lead to decreases in ozone levels.

* * *

As required by the 1990 CAAA, a cleaner burning fuel known as reformulated gasoline (RFG) has been sold as of January 1, 1995 in those areas of the country with the worst ozone or smog problem. RFG is formulated to reduce automotive emissions of ozone-forming pollutants and toxic chemicals—it is estimated to reduce both VOC and toxic emissions by more than 15%. RFG sold during the summer ozone season has lower volatility than most conventional gasoline. Also, RFG has lower levels of certain compounds that contribute to air pollution and a minimum oxygen content of 2 percent, and a maximum benzene content of 1 percent.

The RFG program is mandated year-round in 10 areas of the country (i.e., Los Angeles, San Diego, Hartford, New York, Philadelphia, Chicago, Baltimore, Houston, Milwaukee, and Sacramento). In addition to these required areas, several other parts of the country exceeding the ozone standard have voluntarily entered into the RFG program.

* * *

PARTICULATE MATTER (PM-10)

IX. Air Quality Concentrations		
1988-95	22%	decrease
1994-95	4%	decrease
X. Emissions		
1988-95	17%	
1994-95	6%	decrease

Nature and Sources

Particulate matter is the general term for solid or liquid particles found in the atmosphere. Some particles are large or dark enough to be seen as soot or smoke. Others are so small they can be identified only with an electron microscope. Because particles originate from variety of mobile and stationary sources, their chemical and physical compositions vary widely depending on location and time of the year. In 1987, EPA replaced the earlier Total Suspended Particulate (TSP) standard with a PM-10 standard. The PM-10 standard focuses on smaller particles that are likely to be responsible for adverse health effects because of their ability to reach the lower regions of the respiratory tract. PM-10 includes those particles whose aerodynamic size is less than or equal to a standard particle with a diameter of 10 micrometers (0.0004 inches).

Health and Other Effects

Based on studies of human populations exposed to ambient particle pollution (sometimes in the presence of SO₂) and laboratory studies of both animals and humans, areas of concern have been identified as: negative effects on breathing and respiratory systems, aggravation of existing respiratory and cardiovascular disease, alterations in the body's defense systems against foreign materials, damage to lung tissue, carcinogenesis, and premature death. The elderly, children, and people with chronic obstructive pulmonary or cardiovascular disease, influenza, or asthma are especially sensitive to the effects of PM-10. In addition, particulate matter serves as a carrier for a variety of toxic metals and compounds, and is a major cause of reduced visibility in many parts of the United States.

There are both short- and long-term PM-10 NAAQS. The long-term standard specifies an expected annual arithmetic mean not to exceed 50 µg/m³, while the short-term 24-hour standard of 150 µg/m³ is not to be exceeded more than once per year.

EPA is currently reviewing the NAAQS for particulate matter in accordance with the requirements of the Clean Air Act. Under consideration is a new standard for the fine particles within PM-10 due to epidemiological evidence suggesting stronger associations of mortality and some morbidity effects with fine particles. A decision on whether to retain or revise the NAAQS for PM will be made by November 29, 1996, and final action is scheduled for mid-1997.

Trends

Ambient monitoring networks were revised in 1987 to measure PM-10, so 1988 is the first complete year of PM-10 trends data for most monitors. * * * [B]etween 1988 and 1995, the national average of annual mean PM-10 concentrations decreased 22 percent, while PM-10 emissions decreased 17 percent. Between 1994 and 1995, [t]he national average of annual mean PM-10 concentrations decreased 4 percent, while PM-10 emissions decreased a comparable 6 percent.

Urban and suburban sites have similar trends and comparable average concentration levels. * * * The trends at rural sites are consistent with these urban and suburban patterns, although the composite mean levels are significantly lower.

PM-10 emission from traditionally inventoried sources decreased 17 percent since 1988. * * * The three major categories: fuel combustion, industrial processes, and transportation-contribute almost equally to the total. For the first time in recent years however, emissions in the industrial processes category were slightly higher than those for the fuel combustion category. Industrial process emissions increased 1 percent over 1994 levels, while fuel

combustion emissions decreased 12 percent. Within the fuel combustion category, the largest decrease was in residential wood combustion, which declined more than 25 percent between 1994 and 1995.

* * *

* * * [E]missions from the traditionally inventoried source categories (fuel combustion, industrial processes, transportation) make up only 6 percent of total PM-10 emissions nationwide. The remaining emissions come from natural sources (wind erosion) and the miscellaneous category, which contains emissions for agriculture and forestry, wildfires and managed burning, and fugitive dust from paved and unpaved roads. Of these, fugitive dust makes up the greatest share of all PM-10 emissions (68 percent), followed by agriculture and forestry (20 percent). * * *

* * * When both the annual and 24-hour [PM-10] standards are considered, there were 24 million people living in 22 counties with PM-10 concentrations above the PM-10 NAAQS in 1995.

SULFUR DIOXIDE (SO₂)

XI. Air Quality Concentrations		
1986-95	37% decrease	
1994-95	17% decrease	
XII. Emissions		
1986-95	18% decrease	
1994-95	13% decrease	

Nature and Sources

SO₂ belongs to the family of sulfur oxide gases (SO_x). These gases are formed when fuel containing sulfur (mainly coal and oil) is burned, and during metal smelting and other industrial processes. Most SO₂ monitoring stations are located in urban areas. The highest monitored concentrations of SO₂ are recorded in the vicinity of large industrial facilities.

Health and Other Effects

The major health concerns associated with exposure to high concentrations of SO₂ include effects on breathing, respiratory illness, alterations in the lungs' defenses, and aggravation of existing cardiovascular disease. Major subgroups of the population that are most sensitive to SO₂ include asthmatics and individuals with cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) as well as children and the elderly. There are two primary NAAQS for SO₂ that address these health concerns: an annual mean concentration of 0.030 ppm (80µg/m³) not to be exceeded, and a 24-hour daily concentration of 0.14 ppm (365 µg/m³) not to be exceeded more than once per year.

SO₂ also can produce damage to the foliage of trees and agricultural crops. Together, SO₂ and NO_x are the major precursors to acidic deposition (acid rain), which is associated with the acidification of lakes and streams, accelerated corrosion of buildings and monuments, and reduced visibility. The secondary SO₂ NAAQS, which protects against such damage, is a 3-hour average concentration of 0.50 ppm (1300 µg/m³) not to be exceeded more than once per

year.

Trends

* * *

There were no counties containing major SO₂ point sources that failed to meet the ambient SO₂ NAAQS in 1995. The national composite average of SO₂ annual mean concentrations decreased 37 percent between 1986 and 1995, while SO₂ emissions decreased 18 percent. Between 1994 and 1995, national SO₂ mean concentrations decreased 17 percent, SO₂ emissions decreased 13 percent.

It is important to emphasize that current SO₂ problems in the U.S. are caused by point sources that are usually identified by modeling rather than routine ambient monitoring. Historically, networks are positioned in population-oriented locales. However, 86 percent of total national SO₂ emissions result from fuel combustion sources that tend to be located in less populated areas. * * * [C]omposite annual mean concentrations at sites in suburban and urban locations decreased 40 and 41 percent, respectively, while ambient levels decreased 23 percent at rural sites. The progress in reducing ambient SO₂ concentrations during the past 20 years * * * was accomplished by installing flue-gas control equipment at coal-fired generating plants, reducing emissions from industrial processing facilities such as smelters and sulfuric acid manufacturing plants, reducing the average sulfur content of fuels burned, and using cleaner fuels in residential and commercial burners.

In accordance with the Clean Air Act (CAA), EPA has reviewed and revised the air quality criteria upon which the existing NAAQS for sulfur oxides are based. EPA's final decision was that revisions of the NAAQS for sulfur oxides were currently not appropriate, aside from several minor technical changes.

Initiated by Title IV of the 1990 CAAA, the Acid Rain Program specifies that between 1980 and 2010, total annual SO₂ emissions will be reduced by approximately 40 percent (10 million tons). The program will establish a new approach to environmental protection through the use of market incentives. The program sets a permanent cap on the total amount of SO₂ that may be emitted by electric utilities nationwide. The program is being implemented in two phases: Phase I began in 1995, will last until 1999, and currently involves 445 utility units; Phase II begins in 2000 and is expected to involve over 2000 units.

For the 445 units participating in Phase I, actual emissions measured by continuous emissions monitoring systems were reduced by more than half relative to 1980 levels with emissions plummeting from 10.9 to 5.3 million tons. Emissions for these units were 3.4 million tons (or 39 percent) below the 1995 allowable emissions level of 8.7 million tons required by the 1990 CAAA.

Many utilities installed scrubbers earlier than required since it was much less expensive than previously thought. Other utilities switched to lower sulfur coal and also learned that the cost was not prohibitive. Utilities also participated in the annual allowance auctions held in March 1994, 1995, and 1996, where allowances declined in cost with each succeeding year. Thus, SO₂ compliance was often achieved earlier than EPA had anticipated as reflected by the decline in SO₂ emissions between 1994 and 1995.

According to a recent study prepared by the U.S. Geological Survey, reductions in emissions have resulted in rainfall being less acidic in 1995 due to the first year of implementation of the Acid Rain Program. The study reports a 10 to 25 percent drop in rainfall acidity.

NOTES

1. The National Air Quality and Emissions Trend Report is published annually by the EPA, and the 1995 Report is available on the Internet at <http://www.epa.gov/oar/aqtrnd95/report/>. A comprehensive report of emissions trends from 1900-1995 can be found at <http://www.epa.gov/oar/emtrnd/>.

2. Even while significant progress is being made in reducing emissions of all criteria pollutants, the new standards for ozone and $\text{PM}_{2.5}$ described in the note at the end of Table 2-1 will make it more difficult for many areas to achieve full compliance with the NAAQS. The new standards have been criticized as being too costly for the allegedly modest benefits that will result from their implementation. While the EPA's studies tend to show significant adverse health effects from exposure to currently authorized levels of O_3 and PM_{10} , estimates of health effects and possible lives saved from more stringent standards are necessarily speculative and offer a relatively easy target for opponents to the proposed changes. How should the EPA weigh the costs and benefits of establishing new ambient air quality standards under § 109(b) of the Act? Is it lawful and appropriate for the EPA to engage in risk assessment in making such decisions? Isn't some level of risk assessment inevitable?

3. "Air pollution is not a recent phenomenon. King Edward I of England tried to clear the smoky sky over London in 1272 by banning the use of "sea coal." The British Parliament ordered the torturing and hanging of a man who sold and burned the outlawed coal. Under Richard II (1377-1399) and later under Henry V (1413-1422), England took steps to regulate and restrict the use of coal. One of the earliest recorded publications dealing with air pollution is a pamphlet published in 1661 by royal command of Charles II: 'Fumifugium; or the Inconvenience of the Air and Smoke of London Dissipated; Together with Some Remedies Humbly Proposed,'" written by John Evelyn, one of the founding members of the Royal Society. K. WARK AND C.F. WARNER, AIR POLLUTION: ITS ORIGIN AND CONTROL (2d ed. 1981).

4. As the Emissions Trend Report notes, both NO_x and SO_2 emissions contribute to the phenomenon known as acid rain. Rainwater is naturally acidic due to the dissolution of CO_2 and the resulting formation of carbonic acid—a weak acid that typically brings the pH of rainwater down to about 5.65. See K. WARK AND C.F. WARNER, AIR POLLUTION: ITS ORIGIN AND CONTROL (2d ed. 1981). (A neutral solution has a pH of 7. Each whole number below 7 represents a ten-fold increase in acidity. Thus, a pH of 5 is 100 times more acidic than a pH of 7.) Emissions of NO_x and SO_2 , much of it coming from fossil fuel fired power plants, have contributed to significantly higher levels of acidity in rainwater in certain parts of the world. Scientists have observed pHs for rainwater as low as 2, which is 100,000 more acidic than a neutral solution. *Id.*

5. The Clean Air Act regulates many air pollutants in addition to the six for which NAAQS have been established. Many of these are hazardous air pollutants that are toxic in extremely small quantities. For example, asbestos has been shown to increase the rates of bronchial cancer among those exposed to asbestos dust. Various metals, such as mercury, and organic compounds, such as benzene and toluene, are likewise highly toxic to humans, even in small quantities. Under the 1990 Clean Air Act Amendments, Congress required the EPA to set national emission standards for 185 of these hazardous air pollutants. This program is described in detail in Chapter 6, *infra*.

6. Gaseous pollutants present in the ambient air are commonly measured in parts per million (ppm). The mass of a pollutant is usually expressed as micrograms of pollutant per cubic meter of air ($\mu\text{g}/\text{m}^3$). A microgram (μ) is equal to 1/1,000,000 of a gram.

7. One reason that air pollution has proved difficult to control arises from the fact that ambient air is a common resource shared by many people. Regulating a common resource is the subject of Garrett Hardin's classic essay, *The Tragedy of the Commons*, 162 SCIENCE 1243 (1968). How does this fact complicate the regulator's task?

8. Frequently, the harm occasioned by air pollution is substantial and quantifiable, yet the persons responsible for the pollution are, by and large, able to escape certain identity and thus, liability. Why? What relevance does this problem have for designing an effective control system?

9. Representatives of a local church in an industrial community come to your office asking your assistance in obtaining compensation for the damage to the copper roof of their church. An investigation has confirmed that the damage was caused by air pollution. The church representatives suspect that the polluter primarily responsible for the damage is a nearby steel mill which emits copious quantities of particulates and SO_2 . How would you advise your prospective clients? How would you assess your chances for a successful tort action against the steel mill?

10. In 1973, Japan adopted the Compensation Act for Environmental Pollution-Related Health Injury. Under this statute, persons living in a designated "Class I area" are eligible for compensation for certain pollution-related health injuries without proving causation between the pollution and their illness. Law No. III of 1973. Residents of "Class II areas" are required to show causation to receive compensation. See Shiro Kawashima, *A Survey of Environmental Law and Policy in Japan*, 20 N.C. J. INT'L L. COM. REG. 231 (1995). What relevance does a statute like the Japanese Compensation Act have for those charged with designing a regulatory system for limiting air pollution? In 1988, over strong opposition, the Japanese government canceled all class I areas on the grounds that air pollution reductions had eliminated the threat of pollution-related maladies. Claimants in Class II areas have had difficulty recovering compensation for pollution-related injuries because of the problem of identifying diseases and proving a causal link to pollution. *Id.* at 259.

11. Traditionally, air pollution regulation has focused on the direct impact that the pollutant has on the public health and welfare. In recent years, scientists have discovered that certain types of air emissions, which pose no direct threat to persons or the environment, may nonetheless trigger significant adverse consequences. The two principal examples are carbon dioxide and chlorofluorocarbons. Carbon dioxide, of course, occurs in the atmosphere naturally. But excessive amounts of CO_2 , which result largely from burning fossil fuels, appears to be the prime cause of the global climate change. See Chapter 14, *infra*. Chlorofluorocarbons also contribute to global climate change and, as well, appear to be depleting the stratospheric ozone layer. See Chapter 11, *infra*. How should a regulatory scheme for addressing unconventional pollutants such as these differ from that employed for more traditional pollutants which cause direct impacts?

12. Photochemical oxidants are not emitted directly from pollution sources. Rather, they form in the atmosphere when hydrocarbons and oxides of nitrogen are exposed to sunlight. How might this fact complicate the regulation of photochemical oxidants?

2 MARKET APPROACHES TO THE AIR POLLUTION PROBLEM

As we turn to a study of the various schemes for controlling air pollution, the student should bear in mind the role that economics can, and sometimes does, play in the regulatory process. The following article by Robert N. Stavins and Bradley W. Whitehead focuses on market-based incentives—mechanisms that are gaining political support. What are the advantages and drawbacks of such incentives? What alternative economic-based strategies might be employed?

DEALING WITH POLLUTION: MARKET-BASED INCENTIVES FOR ENVIRONMENTAL PROTECTION

ROBERT N. STAVINS & BRADLEY W. WHITEHEAD
34 ENV'T 7 (1992)

As the United States prepares to address the environmental challenges of the 1990s, it faces an economic and political context fundamentally different from that of the 1970s, when the first environmental measures were enacted. More than a decade of large budget deficits, sluggish productivity growth, and intensified foreign competition has spurred interest in environmental approaches that lower compliance and administrative burdens for industry and government. Public restiveness over the size of government expenditures also has heightened interest in environmental approaches that require less bureaucracy and governmental intrusion into business and household decisions. These forces for change have led to a quest for innovative environmental policy instruments.

NEW CHALLENGES FOR ENVIRONMENTAL POLICY

Many environmentalists in the 1970s and early 1980s viewed the market as villainous because it drove businesses to pursue profits without regard for environmental consequences. According to this view, the government should make decisions concerning appropriate technologies and emissions levels in light of the “externalities”—social costs created by business but borne by others in society—that the business world ignores. Furthermore, the government should not merely specify policy goals but also intervene in decisions about the production process itself. The explicit goal of some legislation during this period was to maximize the benefits of environmental protection regardless of the costs. Indeed, some statutes and regulations explicitly forbade the consideration of costs in setting standards. For example, when the ambient standards for criteria air pollutants are set under the Clean Air Act, the costs of meeting the standards may not, according to law, be taken into consideration.

This philosophy has driven much of the environmental progress over the last two decades, and in many places, the environment is cleaner now than it was before. But the United States and the world continue to face major environmental challenges, including such ongoing problems as urban smog, groundwater pollution, and acid rain and other, newly recognized problems, such as global climate change and indoor air pollution. Moreover, the economic and political contexts in which environmental policy is formulated have changed significantly. The challenge for policymakers today is to devise policies that harness rather than obstruct market forces.

The Need For Cost-Effectiveness

The days have ended when the United States could afford to consider environmental protection in isolation from costs. The U.S. Environmental Protection Agency (EPA) estimates that the nation now spends more than \$100 billion annually to comply with federal environmental laws and regulations, and there is heightened concern over the impact of these regulations on the strength of the economy and its ability to compete in international markets. As a result, policymakers are increasingly cautious about the degree and type of regulatory burdens placed on businesses and individuals.

The existence of federal, state, and local budget deficits makes it difficult for the United States to increase environmental protection simply by spending more money on programs and policies already in place. A new sensitivity to private costs exists, as well. U.S. citizens and policymakers have not lost sight of the benefits of environmental protection, but they are giving increased attention to cost-effective environmental policies. To some people, the concern over cost effectiveness means getting more environmental protection for the same level of expenditures; to others, it means getting the same level of protection for less money. To both, however, it means making the most of scarce resources and maximizing returns on the resources invested—business costs, regulatory effort, political capital, and taxes—to improve the quality of the environment.

Harness Market Forces

An indicator of the presence of such concerns was the adoption of a market-based approach to the control of acid rain in the 1990 Clean Air Act Amendments—tradable “pollution reduction credits.” The adoption of this approach suggests that some political leaders recognize that market forces are not only part of the problem but also a potential part of the solution. By dictating behavior and removing profit opportunities, past environmental regulation has placed unnecessary burdens on the economy and stifled the development of new, more effective environmental technologies. Furthermore, such policies have helped engender an adversarial relationship among regulators, environmentalists, and private industry. As a result, excessive economic resources often have been used for litigation and other forms of conflict among concerned parties.

Policies are needed to mobilize and harness the power of market forces for the environment and to make economic and environmental interests compatible and mutually supportive. Policymakers must begin to link the twin forces of government and industry, without extravagant investment.

POLICIES FOR ENVIRONMENTAL PROTECTION

There are two steps to formulating environmental policy: choosing the overall goal and selecting a means to achieve that goal. Market-based environmental policies that focus on the means of achieving policy goals are largely neutral with respect to the selected goals and

provide cost-effective methods for reaching those goals. Before investigating market incentives, in general, and pollution charges, in particular, it is useful to review the regulatory approach most frequently used—command and control.

Command-And-Control Regulatory Approaches

Command-and-control regulations tend to force all businesses to adopt the same measures and practices for pollution control and thus shoulder identical shares of the pollution control burden regardless of their relative impacts. Government regulations typically set uniform standards—mostly technology- or performance-based—for all businesses. As the name suggests, technology-based standards specify the method and, sometimes, the equipment that businesses must use to comply with a regulation. Usually, regulations do not specify the technology but establish standards on the basis of a particular technology. In situations where monitoring problems are particularly severe, however, technologies are specified. For instance, all businesses in an industry are sometimes required to use the “best available technology” to control water pollution, or, in a more extreme example, electric utilities may be required to utilize a specific technology, such as electrostatic precipitators, to remove particulates. Performance standards, on the other hand, set a uniform control target for each business but allow some latitude in how to meet it. Such a standard might set the maximum allowable units of pollutant per time period but remain neutral with respect to the means by which each business reaches the goal.

Holding all businesses under the same target can be both expensive and counterproductive. Although uniform standards can sometimes be effective in limiting emissions of pollutants, they typically do so at relatively high costs to society. Specifically, uniform standards can force some businesses to use unduly expensive means of controlling pollution because the costs of controlling emissions can vary greatly between and even within businesses, and the right technology in one situation may be wrong in another. For example, in a survey of eight empirical studies of air-pollution control, the ratio of actual, aggregate costs of least-cost benchmarks ranged from 1.07 for sulfate emissions in Los Angeles, California, to 22.0 for hydrocarbon emissions at all U.S. Du Pont plants. Indeed, the cost of controlling a given pollutant may vary by a factor of 100 or more among sources, depending upon the age and location of plants and the available technologies.

The command-and-control approach also tends to freeze the development of technologies that could provide greater levels of control. Little or no financial incentive exists for businesses to exceed their control targets, and both types of standards contain a bias against experimentation with new technologies. A business’ reward for trying a new technology may be that it will subsequently be held to a higher standard of performance, without significant opportunity to benefit financially from its investment. As a result, money that could be invested in technology development is diverted to legal battles over defining acceptable technologies and standards of performance.

Market-Based Policies

Unlike command-and-control policies, which seek to regulate the individual polluter, market-based policies train their sights on the overall pollution in a given area. What is important to most people, after all, is not how many particulates the local widget factory emits but the quality of the air they breathe while walking downtown or sitting in their back yards. Thus, under a market-based approach, the government establishes financial incentives so that the costs imposed on businesses drive an entire industry or region to reduce its aggregate level

of pollution to a desired level. Then, as in any regulatory system, the government monitors and enforces compliance.

In terms of policy, a market-based approach achieves the same aggregate level of control as might be set under a command-and-control approach, but it permits the burden of pollution control to be shared more efficiently among businesses. In economic terms, market-based policies equalize the level of marginal costs of control among businesses rather than the level of control. (The marginal costs of pollution control are the additional or incremental costs of achieving an additional unit of pollution reduction.) As a result, market-based policies provide a monetary incentive for the greatest reductions in pollution by the businesses that can do so most cheaply. The result is that fewer total economic resources are used to achieve the same level of pollution control, or more pollution control is obtained for the same level of resources.

* * *

Market-based incentive systems do not represent a laissez-faire, free-market approach. Rather, the inability of a system of private markets to provide certain goods and services at the most desirable level is typically at the core of pollution problems in which the decisions of businesses and consumers do not take into account the consequences of their decisions for society. At the same time, an incentive-based policy rejects the notion that such market failures justify abandoning the market and allowing the government to dictate the behavior of businesses or consumers. Instead, market-based incentives provide freedom of choice for businesses and consumers to determine the best way to reduce pollution. By ensuring that environmental costs are factored into each company's or individual's decision making process, incentive-based policies harness rather than impede market forces and channel them to achieve environmental goals at the lowest possible cost to society.

At the broadest level, market-based incentive systems fall into four categories:

- *Pollution charges.* Under this approach, polluters are charged a fee on the amount of pollution they generate. In one category of pollution charges, called deposit-refund systems, all or part of some initial charge is rebated if the individual performs certain actions.
- *Tradable permit systems.* Under this mechanism, which was used in the 1990 Clean Air Act Amendments for acid rain control, the government establishes an overall level of allowable air pollution and then allocates permits to businesses in the relevant geographic area so that each is allowed to emit some fraction of the overall total. Companies that keep their emissions below the allocated level may sell or lease their surplus permits to other firms or use them to offset excess emissions in other parts of their own facilities.
- *Removal of market barriers.* In some cases, substantial gains can be made in environmental protection by removing existing government-mandated barriers to market activity. For example, measures that facilitate the voluntary exchange of water rights can promote more efficient allocation and use of scarce water supplies while curbing the need for expensive and environmentally disruptive new water-supply projects.
- *Eliminating government subsidies.* Many existing subsidies promote economically inefficient and environmentally unsound development. For example, the U.S. Forest Service subsidizes below-cost timber sales, which recover less money than is spent on making timber available. These subsidies encourage excessive timber cutting which leads to habitat loss and damage to watersheds.

* * *

MARKET-BASED ENVIRONMENTAL POLICIES

The use of market forces to protect the environment is not a new idea. Economists have

called for market-based environmental policies for the past 25 years. Only recently, however, has the broader policy community begun to regard market instruments favorably. For instance, both U.S. President Lyndon Johnson's proposal for effluent fees and President Richard Nixon's recommendations for a tax on leaded gasoline and a fee on sulfur dioxide emissions were dismissed with little consideration.

It is important to understand what political forces have prevented broader acceptance of market-based environmental regulation over the years because these forces are likely to resist further use of such approaches beyond the new Clean Air Act Amendments. Four such forces have been most powerful. The first of these forces is the adversarial attitude that characterized the beginning of the environmental movement. Throughout much of the 1960s and 1970s, environmentalists typically characterized pollution more as a moral failing of corporate and political leaders than as a by-product of modern civilization that can be regulated and reduced but not eliminated. Although that characterization may have been necessary and successful from a political standpoint, it resulted in wide-spread antagonism toward corporations and a suspicion that anything supported by the business world was probably bad for the environment. Thus, for many years, market-based incentives were characterized by environmentalists not only as impractical but also as "licenses to pollute." Over time, environmental groups have frequently applied a different and more rigorous standard in measuring market-based systems against command-and-control policies, possibly because of the belief that market-based systems legitimize pollution by purporting to sell the right to pollute. This suspicion probably continues among many rank-and-file environmentalists.

A second source of resistance to market-based approaches has been the environmental bureaucracy whose work, organizational power, or even existence might be threatened by a market-based approach. Within EPA, for example, market-based policies for controlling acid rain would not require the service of agency engineers whose task in the current policy regime is to evaluate technologies for disparate sources of emissions across the country. Instead, decisions to select particular air-pollution control technologies would be left up to individual firms.

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Third, resistance to market-based approaches has come from lobbyists who, having learned to influence a command-and-control regulatory system, are understandably reluctant to allow any major changes in the rules of the game. Thus, some lobbyists for both environmental organizations and the private sector, as well as some legislators, resist market-based approaches in part to protect the value of their expertise. The resistance by some industry lobbyists to putting these ideas into practice is especially notable given that the business community has long endorsed the theory of cost-effective, market-oriented approaches to environmental protection.

Finally, market-based approaches—pollution charges in particular—are problematic because they involve new taxes, which have been a controversial and often forbidden subject for much of the last decade. Although "compensating reductions" in other taxes—tax cuts that result in unchanged government revenues—can make pollution charges revenue-neutral and can improve the economic efficiency of the overall tax code, many elected officials are wary of embracing such approaches because voters and pundits might doubt that government would rebate revenues once they have been collected.

* * *

Over the past several years, however, a number of factors have combined to overcome some of the older sources of resistance to market-based incentives for environmental

protection, including strong interest within the Executive Office of the President, aggressive participation by some segments of the environmental community, notably the Environmental Defense Fund (EDF), and the December 1988 release of the bipartisan Project 88 report and the follow-up effort two years later by Senator Timothy Wirth (D-Colo.) and the late Senator John Heinz (R-Penn.).

* * *

Market-based systems are gaining an increasingly broad array of political supporters. In March 1991, EPA administrator William K. Reilly established the Economic Incentives Task Force to identify new areas in which to apply market-based approaches. Congress also shows both increasing interest in and a willingness to debate economic incentives. In fact, the phrase "market-oriented environmental policy" may itself be assuming some political value.

Congressional opportunities for adopting market-based schemes have recently been enhanced by the evolving support of major environmental advocacy organizations. An increasing number of these environmental groups now support market-based reforms. First, and foremost, EDF, an early supporter of market-based environmental policies, is an enthusiastic and effective proponent of such ideas. Furthermore, EDF was a major participant in the Project 88 effort, and EDF economist Daniel Dudek worked closely with the Bush administration to develop the Clean Air Act proposal. Other environmental groups, including the Wilderness Society, the National Wildlife Federation, the National Audubon Society, the Sierra Club, and the Natural Resources Defense Council, now support at least selective use of market-based instruments.

The ability of market-based policies to economize scarce resources, combined with a variety of other factors, has brought these policies to center stage in environmental policy debates within Congress. Debate at the federal level has focused mainly on the potential of tradable permits. The most important application to date has been the acid rain provisions of the 1990 amendments to the Clean Air Act. Tradable-permit systems have also been part of other federal environmental policies, including EPA's emissions trading program for local air quality and the nationwide phase out of lead in automotive fuel. Although state impediments and uncertainty about the future course of the emissions trading program have sharply limited trading by firms, the trading that has occurred has saved more than \$4 billion with no adverse effect on air quality. According to EPA, the lead program, which has inspired much more trading among firms, reduced overall compliance costs by approximately 20 percent, or about \$200 million annually. Tradable-permit systems, including international trading in greenhouse gases, recycling targets combined with tradable permits, and point- and nonpoint-source water pollution control, are now being proposed for a host of environmental problems.

* * *

Not surprisingly, the business community continues to support cost-effective, market-oriented approaches to environmental protection. General Motors, for instance, has endorsed the adoption of a broad-based carbon fee to limit emissions of greenhouse gases. Other major corporations have expressed support for incentives, at least in principle. The net result of this surge of interest in market-based incentives is increased awareness of the many options open to policymakers at both the federal and local levels. Furthermore, the political and bureaucratic sources of opposition to these approaches may be growing weaker.

Unfortunately, a wide range of market-based initiatives has been largely ignored. In particular, the potential of pollution charge systems has received scant attention compared to other market-based instruments, possibly as a result of the same forces that for years impeded adoption of tradable permits and similar approaches, or because the concepts involved are

perceived as too complex. In either case, this lack of attention should now be remedied because pollution charges have several distinct advantages over other policy instruments, especially for certain categories of environmental problems.

THE MECHANICS OF POLLUTION CHARGES

Pollution charge systems are designed to reduce polluting behavior by imposing a fee or tax on polluters. Ideally, the fee should be based on the amount of pollution generated rather than on the level of pollution-generating activities. For example, an electric utility might be charged a tax per unit of sulfur dioxide emitted rather than per unit of electricity generated * * *. In some cases, a fee may be based on the expected or potential quantity of pollution. The Organization for Economic Cooperation and Development distinguishes five types of pollution charges: effluent charges based on the quantity of discharges; user charges, which are payments for public treatment facilities; production charges based on the potential pollution by a product; administration charges, which are payments for such government services as registration of chemicals; and tax differentiation, which provides more favorable prices for "green" products. A true pollution charge provides incentives to businesses or consumers to reduce emissions when that action is less expensive than is continuing to pollute. Pollution charges can be applied either to producers to affect their production decisions or to consumers to affect their consumption and disposal behavior.

Although pollution poses real costs to society—for example, health effects, property damage, and aesthetic impacts—businesses typically do not have to pay for these damages and hence, face little or no incentive to take them into account in production decisions. A business that chooses unilaterally to consider such external costs in its production decisions would be penalized by the market, through reduced cost-competitiveness. Pollution charges force businesses to pay for the external costs of pollution and to incorporate those added costs into their daily decisions.

Pollution charges also provide strong incentives for businesses to develop and adopt improved control technologies. Under a command-and-control system, businesses have no financial incentive to perform better than the regulatory standard demands. Pollution charges, however, do not specify a technology or a fixed standard. Instead, charges are incurred for each increment of pollution rather than only for pollution above a given standard. Thus, businesses are constantly motivated to improve their financial performance by developing technologies that allow them to reduce their output of pollutants.

By charging polluters a fee or tax on the amount of pollution they generate and not on their pollution-generating activities, the government gives businesses an incentive to reduce pollution up to the point at which their marginal control costs are equal to their pollution tax rates. As a result, businesses will control their pollution to different degrees, with polluters for whom control is very expensive controlling less and polluters for whom control is relatively cheap controlling more. The challenge for policymakers is to identify the desirable charge level. If the charge is too high, production may be curtailed excessively; if the charge is too low, insufficient environmental protection will result. An effective charge system thus minimizes the aggregate costs of pollution control and enables the public to pursue other environmental quality actions that might have seemed unaffordable under less efficient approaches, such as command-and-control regulations.

* * *

USING POLLUTION CHARGE REVENUES

The transfer of money from polluters to the government could be substantial. For

instance, the Congressional Budget Office estimates that a \$100-per-ton charge on carbon dioxide emissions could result in more than \$120 billion in annual revenues for the government. This situation raises the obvious question of how such revenue should be used. There are at least three possible courses of action. First, the funds could be used to reduce the federal budget deficit. This alternative has obvious appeal in times of unprecedented government borrowing.

Second, the tax revenue could finance other programs related to environmental protection, such as programs that clean up or mitigate pollution * * *. Such revenues might also be directed to assist people who are hurt economically by the change to a system of pollution charges. For instance, if a pollution charge was used to raise energy prices, it could impose a particular burden on low-income households. However, the revenue from the charge could be used to fund a system of "life-line rates," or free or discounted rates for the first units of energy consumed by a household. Similarly, revenues from a pollution charge that eliminated certain jobs could be used to fund job-search and job-training programs. In addition, revenues from pollution charges might be used to compensate groups deemed to have been unfairly harmed by past environmental policies, such as residents of a neighborhood who were effectively disenfranchised by toxic wastes that were dumped nearby.

Finally, the use of pollution-charge revenues to offset reductions in other taxes may be the most attractive option. Pollution charges are "corrective" taxes that reduce market inefficiencies by discouraging undesirable activities that generate externalities. This effect contrasts sharply with that of "distortionary" taxes, which distort economic behavior by generating market inefficiencies, as in the case of corporate profit taxes, social security and other payroll taxes, and personal income taxes. The corrective nature of pollution charges provides a "double dividend": in addition to providing incentives to reduce pollution, pollution-charge revenues can finance reductions in distortionary taxes. This tradeoff is particularly important in today's political climate, in which policymakers are reluctant to consider any new taxes. A revenue-neutral tax policy change, which combines the introduction of pollution charges with the reduction or elimination of other taxes, would protect the environment by reducing harmful emissions and would reduce distortions associated with other taxes. Studies indicate that, on average, U.S. personal and corporate income taxes generate distortions or pure losses of 20 to 50 cents for every new dollar of tax revenue collected. Such a shift in tax policy would discourage socially undesirable activities such as pollution, rather than socially beneficial activities, such as labor and capital formation.

* * *

OTHER POTENTIAL APPLICATIONS

Pollution charges and user fees can be used for combating many contemporary environmental problems. For example, a charge placed on the sale of pesticides and other agricultural chemicals could encourage farmers to use chemicals more efficiently and manufacturers to find less environmentally harmful substitutes. Such a charge also could help address the difficult problem of non-point source water pollution.

Similarly, the United States could follow the example of Germany and impose effluent charges on water pollution. Such charges could encourage businesses to reduce emissions below levels currently allowed by the discharge permits. Emissions charges also could be used to control air pollution, even where standards are already in place. For example, the EPA Economic Incentives Task Force proposed fees on major stationary sources of volatile organic compounds, which are precursors of urban smog.

A set of related policies could help address environmental problems associated with automobile use in major cities. In particular, "congestion pricing" could be used to charge drivers a fee for rush-hour trips. Other approaches that could reduce the total miles traveled in automobiles and, therefore, air pollution include employee parking charges, increased charges for public parking, and smog taxes.

Establishing user fees for the U.S. national parks and forests could improve resource management. Such schemes may be critical in weaning forest managers away from their dependence on timber revenues. Although 41 percent of gross U.S. Forest Service forest value is related to recreational uses, recreation generates only 3 percent of Forest Service revenues. Clearly, users of publicly owned natural resources should pay for portion of the benefits they receive.

POLLUTION CHARGES IN THE POLITICAL ARENA

No single policy mechanism—either incentive based policies in general nor pollution charges in particular—can be an environmental panacea. Pollution charges, however, promise to provide cost-effective solutions for some pressing environmental problems while spurring technological advances.

Good ideas are not self-adopting, however. Even if the new Clean Air Act provisions have signaled the beginning of a new year of environmental policy, resistance to market-based approaches has not disappeared. In addition to opposition from those who simply oppose environmental protection, pollution charges will have to overcome the same combination of self-interest and suspicion from those within the environmental protection process who have obstructed market-based approaches for decades.

Initially, it may be practical to apply pollution charges to new problems for which policy mechanisms are not already in place. Such an approach could minimize disruptions to industry and consumers, reduce the chance that regulations will work at cross purposes, and challenge the authority of fewer vested interests. If pollution charges turn out to be effective, they could serve as alternatives to environmental regulations in place today that are deemed to be ineffective or that achieve their objectives only at extremely high costs to society. Furthermore, a growing array of state and local initiatives may help pollution charges overcome public dislike for taxes, reduce the costs of environmental protection, and stimulate technological development.

In fact, pollution charges could make the process of environmental policy formulation more explicit to the U.S. population, which has always been shielded from the very trade-offs involved in establishing environmental goals and standards. As a result, policy discussions could move away from a narrow focus on technical specifications to a broader consideration of goals and strategies. The public could become involved in construction debates regarding the desirable level of environmental protection and could recapture the critical decisions of environmental goal-setting from bureaucrats, technicians, and special-interest groups. As new environmental policies arise and old ones persist, the limited resources of government agencies and society at large will be stretched further and further. Pollution charges and other incentive-based instruments may eventually be the only feasible courses of action to sustain or improve environmental quality while maintaining economic well-being. With the necessary political leadership, it may be possible to begin moving in the right direction now.

NOTES

1. In a section from this article that is not included in this excerpt, the authors note and discuss at length “four particularly promising areas [for pollution charges] that need immediate action: greenhouse gas reduction; motor vehicle fuel efficiency; solid waste reduction; and hazardous waste management.” How might pollution charges be used to address each of these problems? What difficulties do you foresee in achieving an effective program for them?

2. An earlier article which addresses the U.S. experience with incentive-based environmental policies, and suggests growing support for them is Robert N. Stavins & Robert H. Hahn, *Incentive-Based Environmental Regulation: A New Era from an Old Idea*, 18 *ECOL. L.Q.* 1 (1991).

3. As Stavins and Whitehead note, marketable pollution rights have begun to receive broad acceptance at the federal level. In its simplest form, the scheme operates as follows: First, the agency determines the maximum amount of emissions that will be permitted in a given area. Then, an auction or other method for distributing those rights is established. Thereafter, the owners of such rights are free to sell their pollution rights to others for whatever the market will bear. A set-aside program can be established if necessary to assure that small businesses or other special groups are not left out of the distribution. Unlike the effluent charge system, a system of transferable pollution rights will not generate income for the government for the mitigation of damages caused by pollution. The 1990 Amendments introduce what may be the most ambitious experiment with marketable pollution rights ever adopted. The Acid Deposition Program contained in Title IV of the Amendments establishes a ceiling on SO₂ emissions nationwide, and provides for the distribution of “allowances” for each ton of SO₂ emitted to electric utilities, the chief source of SO₂ emissions in the United States. These allowances are freely marketable. The Acid Deposition Program is described in greater detail in Chapter 9, *infra*.

4. A system of effluent charges will not relieve the government of the burden of enforcement. On the contrary, an effluent charge system places a premium on effective enforcement. Those paying for the right to emit a certain level of pollution must have confidence that other polluters are paying their fair share. Experience to date with the Clean Air Act’s SO₂ emissions trading program, however, suggests that enforcement has not posed significant problems. See Dallas Botraw & Byron Swift, *An Analysis of the Clean Air Act’s Acid Deposition Program*, 26 *ENVTL. L. REP.* 10,411 (News & Analysis, 1996). While this program is not strictly an effluent charge system, it does require that polluters own sufficient SO₂ allowances to cover their emissions. Thus, the enforcement issues raised by this program are essentially the same as those that would arise with an effluent charge system.

5. An effluent charge system also requires the government to establish an appropriate level at which such charges are set. However, Professor Currie notes the difficulty in translating economic theory into practical reality.

The difficulty of determining the level at which emission taxes or charges should be set * * * has precluded their widespread use. In order to achieve optimal pollution control, the charge should reflect the cost of the damage done by each unit of contaminant emitted. Quantifying pollution damage even in the gross has proved problematic for economists, however. The problem is exacerbated by

the fact that the damage done by any given unit of contamination varies widely according to a host of factors. A stated quantity of sulfur dioxide, for example, may do no detectable harm at all if emitted in an area where there are no other emissions; yet when it is added to existing discharges of the same pollutant in a heavily contaminated area, it could mean the difference between life and death. Moreover, the identical quantity discharged may have a more acute effect on air quality, and thus do more damage, if emitted at ground level rather than through a high stack, or during calm rather than windy weather, or in a confined river valley rather than on a plain. The same quantity of hydrocarbon emissions may cause a more serious oxidant problem in Denver than in Minneapolis because of the higher altitude and greater prevalence of sunlight. Identical sulfur dioxide emissions may be more harmful in the presence of high particulate concentrations. Further, even the same levels of ambient air quality may do more harm in New York City, where there are many people and much valuable property, than in an uninhabited desert. Pollution will do more harm to the elderly and ill than to healthy young adults, and least of all to those who take precautions against it.

Given these uncertainties, any tax that is set would probably be highly arbitrary, and the likelihood that it would result in anything resembling an optimal degree of control is slim. Most legislative bodies have therefore understandably placed primary reliance on subjective but candid efforts to determine optimal levels of pollution by direct governmental prescription.

DAVID P. CURRIE, AIR POLLUTION: FEDERAL LAW & ANALYSIS § 1.03 (1981).

6. One of the most difficult pollution control problems involves sources that are too numerous to regulate effectively. Automobiles and wood stoves, for example, are major contributors of air pollution in some parts of the country, but it is impractical to impose emission standards on individual users of these sources. The Clean Air Act addresses the automobile problem, primarily at the manufacturing stage. It requires manufacturers to limit air emissions for the “*useful life*” of the vehicle. 40 C.F.R. § 86 (1994). In 1988, EPA established new source performance standards for controlling particulate emissions from residential wood heaters. 40 C.F.R. § 60.530 (1994). These standards, like those for automobiles, also address the problem at the manufacturing stage. They require manufacturers to ensure that all new residential wood heaters reduce emission “to levels achievable by the best demonstrated system of continuous emission reduction, considering costs, nonair quality health and environmental impacts, and energy requirements.” 53 Fed. Reg. 5860 (1988). Are there any market mechanisms that might be employed to further reduce pollution from these sources? Can the “transaction costs,” that is, the costs of negotiating the effective use of such mechanisms, be kept at a level that is low enough to make such market systems worthwhile?

7. Suppose the government of Shangri La recognizes the right of polluters to discharge emissions freely into the air. The injury to the citizens of Shangri La from uncontrolled emissions, however, far outweighs the benefits to industry. One economic solution to this problem is for the citizens to join together and pay the polluters a sufficient amount to obtain a reduction in pollution to the point where the cost of additional payments exceed the benefits to the citizens. Assuming that transaction costs are the same, will the quantity of pollution or economic positions of the parties be any different if, rather than recognizing the rights of polluters to pollute, the government recognized the right of its citizens to demand clean air? For an argument that the result is the same, see R. H. Coase, *The Problem of Social Cost*, 3 J.

L. & ECON. 1 (1960). Note, however, that the transaction costs under either scenario may be prohibitive. RICHARD A. POSNER, *ECONOMIC ANALYSIS OF LAW* 61-65 (4th ed. 1992). Judge Posner describes the transaction costs in our hypothetical problem along with the related problem of the "free rider" as follows:

If there are significant elements of bilateral monopoly in a two-party transaction, that is, if neither party has good alternatives to dealing with the other, transaction costs may be quite high

The costs of transacting are highest when elements of bilateral monopoly coincide with a large number of parties to the transaction—a quite possible conjunction. For example, if homeowners have a right to be free from pollution, the factory that wants to have a right to pollute must acquire it from every homeowner. If only 1 out of 1,000 refuses to come to terms, the rights that the factory has purchased from the other 999 are worth nothing. (Why?) Because the holdout can extract an exorbitant price . . . each homeowner has an incentive to delay coming to terms with the factory; the process of negotiation may therefore be endlessly protracted.

If instead of the homeowners having the right to be free from pollution, the factory has the right to pollute, the homeowners must get together and buy the factory's right if they wish to be free from pollution. Transaction costs will again be high. Each homeowner will again have an incentive to drag his feet in negotiations with the factory. . . . He will think: "If I refuse to contribute my fair share of the purchase price, others, who care more deeply about pollution than I do, will make up the difference. The factory will be induced to stop polluting. I will benefit along with the others, but at zero cost." The costs of overcoming this foot-dragging by negotiations among the affected homeowners will be high if there are many of them, so again a transaction may be infeasible.

Id. at 62-63. What mechanisms are available to avoid high transaction costs and thus promote the most efficient result?

8. Well before the 1990 Amendments, EPA developed an emissions trading policy which, among other things, established a mechanism for trading pollution rights in areas where existing pollution levels were too high to otherwise allow the construction of new sources in an area. EPA's current emissions trading policy is reproduced, in part, in Chapter 9. A thorough review of the development of emissions trading in the United States is set forth in Daniel J. Dudek & John Palmisano, *Emissions Trading: Why is This Thoroughbred Hobbled?*, 13 COLUM. J. ENVTL. L. 217 (1988).

9. The Clean Air Act employs economics in its enforcement program as well as its regulatory program. Under § 120 of the Act, penalties for violations of the law may be "no less than economic value which a delay in compliance * * * may have for the owner." § 120(d)(2)(A). Is such a penalty necessary to assure compliance with the law? Is it sufficient? What problems would you anticipate in administering such a program? See Chapter 10, *infra*.

10. Despite the increasing acceptance of market approaches to air pollution problems, "command-and-control" strategies continue to dominate the law. Consider the following criticism of the command-and-control approach to regulation, and its comparison to a marketable permit approach.

REFORMING ENVIRONMENTAL LAW: THE DEMOCRATIC CASE FOR MARKET INCENTIVES

BRUCE A. ACKERMAN & RICHARD B. STEWART, 13 COLUM. J. ENVTL. L. 171 (1988)

* * *

II. THE EXISTING SYSTEM

The existing system of pollution regulation is primarily based on a best available control technology (BAT) strategy. If an industrial process generates some non-trivial risk, the responsible plant or industry must install whatever technology is available to reduce or eliminate the risk, so long as the costs of doing so will not shut down the relevant plant or industry. BAT requirements are largely determined through centralized uniform federal regulation. Under the Clean Water Act's BAT strategy, EPA adopts nationally uniform effluent limitations for some 500 different industries. A similar BAT strategy is used in the Clean Air Act for new industrial sources of toxic air pollutants. BAT strategies are also widely used in many fields of environmental regulation other than air and water pollution.

BAT was embraced by Congress and administrators in the early 1970's in order to impose immediate, readily-enforceable, federal controls on a relatively few, widespread pollutants, while avoiding widespread industrial shutdowns. Subsequent experience and analysis has demonstrated:

1. Uniform BAT requirements waste many billions of dollars annually by ignoring variations among plants and industries in the costs of reducing pollution and by ignoring geographic variations in pollution effects. A more cost-effective strategy of risk reduction could free up enormous resources for additional pollution reduction or other purposes.

2. BAT controls, and the litigation which they provoke, impose disproportionate penalties on new products and processes. A BAT strategy typically imposes far more stringent controls on new sources because there is no risk of shutdown. Also, new plants and products must run the gauntlet of lengthy regulatory and legal proceedings to win approval; the resulting uncertainty and delay discourage new investment. By contrast, existing products and processes can use the legal process to postpone or water down compliance requirements. Also, BAT strategies impose disproportionate burdens on more productive and profitable industries because they can "afford" more stringent controls. This "soak the rich" approach penalizes growth and international competitiveness.

3. BAT controls can ensure the diffusion of established control technologies. But they do not provide strong incentives for the development of new, environmentally superior strategies and may actually discourage their development. Such innovations are essential if we are to maintain economic growth in the long run without simultaneously increasing pollution and other forms of environmental degradation.

4. BAT involves centralized, uniform determination of complex scientific, engineering and economic issues involving the feasibility of controls on hundreds of thousands of pollution sources. Such determinations impose massive information gathering burdens on administrators and provide a fertile ground for litigation, producing reams of technical data, complex adversary rulemaking proceedings and protracted judicial review. Given the high cost of regulatory requirements, it is often more cost effective for industry to invest in litigation rather than compliance.

5. A BAT strategy is inconsistent with intelligent priority setting. Simply regulating to the hilt whatever pollutants or problems happen to get on the regulatory agenda may preclude

an agency from dealing adequately with other more serious problems that come to scientific attention later. The BAT strategy also tends to reinforce regulatory inertia. Foreseeing that “all or nothing” regulation of a given substance under BAT will involve very large administrative and compliance costs, and recognizing that resources are limited, agencies will seek to limit the number of substances on the agenda for regulatory action.

This indictment is not a piece of idle speculation but the product of years of patient study by lawyers, economists and political scientists. There are, for example, no less than fifteen careful efforts to estimate this extra cost burden generated by a wide variety of traditional bureaucratic systems used to control a variety of air and water pollutants in different parts of the country. Of the twelve studies of different air pollutants—ranging from particulates to chlorofluorocarbons—seven indicated that traditional forms of regulation were more than four times more expensive than the least-cost solution; four indicated that they were about seventy-five percent more expensive; and only one suggested a modest cost-overrun of seven percent. Three studies of water pollution control in five different watersheds also indicate the serious inefficiency of traditional forms of command and control regulation. These careful studies of selected problems cannot be used to estimate precisely the total amount traditional forms of regulation are costing the American people. Nonetheless, very large sums are at stake. Even if a reformed system could cut costs by “only” one-third, it could save more than \$15 billion a year from the nation’s annual expenditure of \$50 billion on air and water pollution control.

* * *

III. REFORM IS REALISTIC

A BAT system has an implicit environmental goal: achievement of the environmental quality level that would result if all sources installed BAT controls on their discharges. The usual means for implementing this goal are centralized, uniform regulations that command specific amounts of cleanup from specific polluters. When a polluter receives an air or water permit under existing law, the piece of paper does not content itself, in the manner of Polonius, with the vague advice that he “use the best available technology.” Instead, the permit tries to be as quantitatively precise as possible, telling each discharger how much of each of the regulated pollutants he may discharge.

Reformers propose to build upon, and do not abandon, this basic permit system. Indeed, they have only two, albeit far-reaching, objections to the existing permit mechanism. First, existing permits are free. This is bad because it gives the polluter no incentive to reduce his wastes below the permitted amount. Second, permits are not transferable. This is bad because polluter A is obliged to cut back his own wastes even if it is cheaper for him to pay his neighbor B to undertake the extra cleanup instead.

The basic reform would respond to these deficiencies by allowing polluters to buy and sell each other’s permits—thereby creating a powerful financial incentive for those who can clean up most cheaply to sell their permits to those whose treatment costs are highest. This reform will, at one stroke, cure many of the basic defects with existing command-and-control regulation. A system of tradable rights will tend to bring about a least-cost allocation of control burdens, saving billions of dollars annually. It will eliminate the disproportionate burdens that BAT imposes on new industries and more productive industries by treating all sources of the same pollutant on the same basis. It will provide positive economic rewards for the development by those regulated of environmentally superior products and processes. It will, as we show below, reduce the incentives for litigation and simplify the issues in controversy.

But would allowing the sale of permits lead to a bureaucratic nightmare? Before proceeding to the new administrative burdens marketability will generate, it is wise to pause to consider marketability's great administrative advantages.

First, it would immediately eliminate most of the information processing tasks that are presently overwhelming the federal and state bureaucracies. No longer would the EPA be required endlessly to hold hearings to determine the best available control technologies in each major industry of the United States, and defend its determinations before the courts; nor would federal and state officials be required to spend vast amounts of time and energy to adapt these changing national guidelines to suit the particular conditions of every important pollution source in the United States. Instead of giving the job of economic and technological assessment to bureaucrats, the marketable rights mechanism would put this information-processing burden precisely where it belongs: upon business managers and engineers who are in the best position to figure out how to cut back on their plant's pollution costs. If the managers operating plant A think they can clean up a pollutant more cheaply than those in charge of plant B, they should be expected to sell some of their pollution rights to B at a mutually advantageous price; cleanup will tend to occur at least cost without the need for constant bureaucratic decisions about the best available technology. While the reformed system may impose new regulatory tasks, it removes the greatest roadblock to administrative efficiency: it allows inevitably ill-informed bureaucrats to avoid technological and economic decisions best made by the people operating the plants.

Second, marketable permits would open up enormous financial resources for effective and informed regulation. While polluters would have the right to trade their permits among themselves during the n years they are valid, they would be obliged to buy new ones when their permits expired at an auction held by the EPA in each watershed and air quality control region. These auctions would raise substantial sums of money for the government on a continuing basis. While no study has yet attempted to make global estimates for the United States as a whole, existing work suggests that auction revenues could well equal the amount polluters would spend in cost-minimizing control activities. Even if revenues turned out to be a third of this amount, the government would still be collecting more than \$6-\$10 billion a year. Moreover, it seems reasonable to suppose that Congress would allow the EPA (and associated state agencies) to retain a share of these revenues. Since the current EPA operating budget is \$1.3 billion, using even a fraction of the auction fund to improve regulatory analysis, research and monitoring would allow a great leap forward in the sophistication of the regulatory effort. Given its revenue-raising potential, environmental reform is hardly a politically unrealistic pipe dream. To the contrary, it is only a matter of time before the enormous federal deficit forces Congress and the President to consider the fiscal advantages of an auction scheme.

Third, the auction system would help correct one of the worst weaknesses of the present system: the egregious failure of the EPA and associated state agencies to enforce the laws on the books in a timely and effective way. Part of the problem stems from the ability of existing polluters to delay regulatory implementation by using legal proceedings to challenge the economic and engineering bases of BAT regulations and permit conditions. But agencies also invest so little on monitoring that they must rely on polluters for the bulk of their data on discharges. Since polluters are predictably reluctant to report their own violations, EPA systematically generates a Panglossian view of regulatory reality. For example, a General Accounting Office investigation of 921 major air polluters officially deemed in compliance revealed 200, or twenty-two percent were out of compliance. Even when illegal polluters are identified, they are not effectively sanctioned. For example, the EPA's Inspector General in

1984 found that it was a common practice for water pollution officials to respond to violations by issuing administrative orders which effectively legitimize excess discharges. Thus, while the system may, after protracted litigation, eventually “work” to force the slow installation of expensive control machinery, there is no reason to think this machinery is being run well when it is eventually installed. Although there are many reasons for this appalling weakness in enforcement, one stands out above all others: the present system does not put the pressure on agency policymakers to make the large investments in monitoring and personnel that are required to make the tedious and unending work of credible enforcement a bureaucratic reality.

The auction system would change existing compliance incentives dramatically. It would reduce the opportunity and incentive of polluters to use the legal system for delay and obstruction by finessing the complex BAT issues, and it would limit dispute to the question whether a source’s discharges exceeded its permits. It would also eliminate the possibility of using the legal system to postpone implementation of regulatory requirements by requiring the polluter that lost its legal challenge to pay for the permits it would have been obliged to buy during the entire intervening period of noncompliance (plus interest).

The marketable permit system would also provide much stronger incentives for effective monitoring and enforcement. If polluters did not expect rigorous enforcement for the term of their permits, this fact would show up at the auction in dramatically lower bids: Why pay a lot for the right to pollute legally when one can pollute illegally without serious risk of detection? Under a marketable permit approach, this problem would be at the center of bureaucratic attention. For if, as we envisage, the size of the budget available to the EPA and state agencies would depend on total auction revenues, the bureaucracy’s failure to invest adequately in enforcement would soon show up in a potentially dramatic drop in auction income available in the next budgetary period. This is not a prospect that EPA administrators will take lightly. Monitoring and enforcement will become agency priorities of the first importance. Moreover, permit holders may themselves support strong enforcement in order to ensure that cheating by others does not depreciate the value of the permit holders’ investments.

A system of marketable permits, then, not only promises to save Americans billions of dollars a year, to reward innovative improvements in existing cleanup techniques and to eliminate the BAT system’s penalty on new, productive investment. It also offers formidable administrative advantages. It relieves agencies of the enormous information-processing burdens that overwhelm them under the BAT system; it greatly reduces litigation and delay; it offers a rich source of budgetary revenue in a period of general budgetary stringency; and it forces agencies to give new importance to the critical business of enforcing the law in a way that America’s polluters will take seriously. But, of course, there is no such thing as a free lunch in bureaucracy-land. Against these formidable advantages, the new system will generate new tasks. Are these new functions more or less onerous than the command-and-control operations that have been reformed away?

Begin by isolating four distinct bureaucratic functions required by the new system. First, the agency must estimate how much pollution is presently permitted by law in each watershed and each air quality region. Second, it must run a system of fair and efficient auctions in which polluters can regularly buy rights for limited terms. Third, it must run an efficient title registry in each region that will allow buyers and sellers to transfer rights in a legally effective way. Fourth, it must consistently penalize polluters who discharge more than their permitted amounts.

And that’s that. So far as the fourth bureaucratic task is concerned, we have already

given reasons to believe that the EPA would enforce the law far more effectively under the new regime than it does at present. So far as the first three management functions are concerned, we think that they are, in the aggregate, far *less* demanding than those they displace under the BAT system.

* * *

NOTES

1. The Acid Deposition Program contained in Title IV of the 1990 Amendments and described previously, essentially tracks the recommendations made by Ackerman and Stewart and thus offers a useful experiment for gauging the success of their approach. Early reports are very encouraging, suggesting that companies subject to the program have generally over complied such that SO₂ emissions are 40% less than allowed by the law. These reductions have been achieved at about one-half the cost of conventional controls. Furthermore, virtually no enforcement action has been necessary. Dallas Botraw & Byron Swift, *An Analysis of the Clean Air Act's Acid Deposition Program*, 26 ENVTL. L. Rep. 10411 (News & Analysis, 1996)

2. Underlying the approach advocated by Ackerman and Stewart is the assumption that pollution rights are fungible—i.e., that a ton of SO₂ from one point source is equivalent to a ton of SO₂ at any other source within a defined region. Ackerman and Stewart suggest, for example, that the agency could limit trades to pollution rights within the same watershed or air quality region. Is this necessary in all cases? Consider, for example, carbon dioxide (CO₂), a gas emitted as a result of fossil fuel combustion. CO₂ is currently unregulated but it is thought to be the most important global warming gas. Assuming a market system for global warming gases, over what portion of the world could such gases be traded?

3. Conversely, is it sufficient in all cases to allow trading within an airshed or defined region? Suppose, for example, that all of the pollution rights for a particular hazardous air pollutant are discharged at a single plant site, rather than 40 different points throughout a 500 square mile region.

4. BAT standards are not exactly what the acronym suggests. Rather they are typically emission limitations which are devised from an analysis of best available technology. So, for example, when the EPA promulgated new source performance standards for asphalt concrete plants it considered what emissions limitations could be achieved through the use of either a scrubber or baghouse. EPA's tests with these technologies showed emission levels of .007, .008, .018 and .031 gr/dscf (grams per dry cubic feet at standard conditions). On the basis of this information, EPA set an emission limit of .04 gr/dscf. See *National Asphalt Pavement Ass'n v. Train*, 539 F.2d 775 (D.C. Cir. 1976) *infra* at Chapter 9.A.

5. Contrast Ackerman & Stewart's view of conventional control systems with that of Howard Latin. Latin contends that:

[T]he academic literature on "regulatory reform" reflects an excessive preoccupation with theoretical efficiency, while it places inadequate emphasis on actual decision making costs and implementation constraints. Any system for environmental regulation must function despite the presence of pervasive uncertainty, high decision making costs, and manipulative strategic behavior

resulting from conflicting private and public interests. Under these conditions, the indisputable fact that uniform standards are inefficient does not prove that any other approach would necessarily perform better. In a “second-best” world, the critical issue is not which regulatory system aspires to ideal “efficiency” but which is most likely to prove effective.

In recognition of severe implementation constraints on environmental regulation, this article identifies numerous advantages of uniform standards in comparison with more particularized and flexible regulatory strategies. These advantages include decreased information collection and evaluation costs, greater consistency and predictability of results, greater accessibility of decisions to public scrutiny and participation, increased likelihood that regulations will withstand judicial review, reduced opportunities for manipulative behavior by agencies in response to political or bureaucratic pressures, reduced opportunities for obstructive behavior by regulated parties, and decreased likelihood of social dislocation and “forum shopping” resulting from competitive disadvantages between geographical regions or between firms in regulated industries.

Howard Latin, *Ideal Versus Real Regulatory Efficiency: Implementation of Uniform Standards and “Fine Tuning” Regulatory Reform*, 37 STAN. L. REV. 1267 (1985). Is Latin’s argument about the advantages of uniform standards compelling? How would Ackerman and Stewart respond? See Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 STAN. L. REV. 1333 (1985).

6. Assuming that the problems inherent in a marketable pollution rights program can be solved, does such a program go far enough? Should economic principles be used, in the first instance, to help determine the number of rights to put on the market? Some economists argue that this decision should itself be subject to market forces—that persons who pollute should bargain with persons who bear the costs of pollution to determine more efficiently how much pollution should be allowed. See, e.g., T. ANDERSON & D. LEAL, *FREE MARKET ENVIRONMENTALISM*, 17-23 (1991). The principal alternative to this approach—the one generally practiced today—is to develop and publish scientific and economic information about the impacts and costs of various pollution levels. Government officials can then make the policy choices necessary to set pollution levels. This can be done by a legislature, as for example when the Congress capped national SO₂ emissions under Title IV of the Clean Air Act (see Chapter 9 F, *infra*); or by an administrative agency, as when the EPA sets ambient air quality standards based on the health and safety standards established by § 108(a)(1). See Chapter 5, *infra*. An international body might also be called upon to set pollution limits as in the case of the Montreal Protocol and its amendments, which regulate the production of stratosphere ozone-depleting chemicals. What problems exist with each approach? See Symposium, *Free Market Environmentalism*, 15 HARV. J.L. & PUB. POL’Y 297 (1992).

7. A basic assumption of the “free market environmentalists” is that the market is capable of allocating goods based on a “willingness to pay” theory. Is the assumption valid? Consider Mark Sagoff’s criticism of this approach. Sagoff argues that the market approach ignores the fact that individuals play different roles in society. MARK SAGOFF, *THE ECONOMY OF THE EARTH* (Cambridge Univ. Press 1988). Of particular relevance to the issue of “environmental” choices are the individual’s role as a citizen on the one hand, and a consumer on the other:

As a *citizen*, I am concerned with the public interest, rather than my own interest; with the good of the community, rather than simply the well-being of my family. . . .

In my role as a *consumer* . . . I concern myself with personal or self-regarding wants and interests; I pursue the goals I have as an individual. I put aside the community-regarding values I take seriously as a citizen, and I look out for Number One instead.

Id. at 8 (emphasis in original). Recognition of this distinction leads Sagoff to observe that citizen values and the social regulation that follows from those values help to define a nation:

The positive thesis of this book is that social regulation expresses what we believe, what we are, what we stand for as a nation, not simply what we wish to buy as individuals. Social regulation reflects public values we choose collectively, and these may conflict with wants and interests we pursue individually. . . .

Social regulation most fundamentally has to do with the identity of a nation—a nation committed historically, for example, to appreciate and preserve a fabulous natural heritage and to pass it on reasonably undisturbed to future generations. This is not a question of what we *want*; it is not exactly a question of what we *believe in*; it is a question of what we *are*.

Id. at 16-17 (emphasis in original). This observation leads to Sagoff's conclusion that market theory is not an appropriate vehicle for making social choices.

8. Another economic tool for measuring the appropriateness of regulation is the benefit-cost analysis. In 1995, the U.S. House of Representatives passed legislation that would have denied agencies the authority to promulgate rules unless they could show that the benefits of the rules exceeded the costs and that no more cost-effective alternatives were available. H.R. 9, 104th Cong. § 3201 (1995) (Risk Assessment and Cost Benefit Act of 1995). The proposed legislation would have effectively provided agencies with a basis for refusing to promulgate a rule that might otherwise have been mandated by law. Although this legislation was not enacted, it appears to signal growing support for setting economic criteria for rule making. What problems can you see with such an approach? Consider Mark Sagoff's criticism:

Cost-benefit analysis does not, because it cannot, judge opinions and beliefs on their merits but asks instead how much might be paid for them, as if a conflict of views could be settled in the same way as a conflict of interests. Analysts who take this approach, of course, tend to confuse views with interests. They do this by giving political, ethical and cultural convictions technical names—"bequest values," "existence values," "intangibles," "fragile values" or "soft variables"—as if by the nomenclature they could transform beliefs that have carried the day before legislatures into the data of economic methodology. . . .

[W]hen cost-benefit analysis attempts to do the work of ethical and political judgment, it loses whatever objectivity it might have had and becomes a tool of partisan politics. . . . [W]hen cost-benefit analysis assigns "shadow" prices to "amenity," "option," "bequest," and other citizen beliefs and values, theoretical "breakthroughs" replace sound judgment and common sense. At that point, economic analysis deteriorates into storytelling and hand-waving likely to convince no one except those partisans who agree with—and possibly have paid for—its results.

THE ECONOMY OF THE EARTH, *supra* 38-39, n.7.

9. In 1993, President Clinton signed an Executive Order generally supportive of benefit-cost analysis in rule making. Exec. Order No. 12,866, 58 Fed. Reg. 51,735 (1993). Among other things, the Order requires “[e]ach agency [to] assess both costs and benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs.” *Id.* at §1(b)(6).

3 AIR POLLUTION AND THE COMMON LAW

The case that follows should be familiar to many law students. Consider its particular relevance to the problem of air pollution law.

BOOMER V. ATLANTIC CEMENT COMPANY
257 N.E.2d 870 (N.Y. 1970)

BERGAN, Judge.

Defendant operates a large cement plant near Albany. These are actions for injunction and damages by neighboring land owners alleging injury to property from dirt, smoke and vibration emanating from the plant. A nuisance has been found after trial, temporary damages have been allowed; but an injunction has been denied.

The public concern with air pollution arising from many sources in industry and in transportation is currently accorded ever wider recognition accompanied by a growing sense of responsibility in State and Federal Governments to control it. Cement plants are obvious sources of air pollution in the neighborhoods where they operate.

But there is now before the court private litigation in which individual property owners have sought specific relief from a single plant operation. The threshold question raised by the division of view on this appeal is whether the court should resolve the litigation between the parties now before it as equitably as seems possible; or whether, seeking promotion of the general public welfare, it should channel private litigation into broad public objectives.

* * *

Effective control of air pollution is a problem presently far from solution even with the full public and financial powers of government. In large measure adequate technical procedures are yet to be developed and some that appear possible may be economically impracticable.

It seems apparent that the amelioration of air pollution will depend on technical research in great depth; on a carefully balanced consideration of the economic impact of close regulation; and of the actual effect on public health. It is likely to require massive public expenditure and to demand more than any local community can accomplish and to depend on regional and interstate controls.

A court should not try to do this on its own as a by-product of private litigation and it seems manifest that the judicial establishment is neither equipped in the limited nature of any judgment it can pronounce nor prepared to lay down and implement an effective policy for the elimination of air pollution. This is an area beyond the circumference of one private lawsuit. It is a direct responsibility for government and should not thus be undertaken as an incident to solving a dispute between property owners and a single cement plant—one of many—in the

Hudson River valley.

The cement making operations of defendant have been found by the court of Special Term to have damaged the nearby properties of plaintiffs in these two actions. That court, as it has been noted, accordingly found defendant maintained a nuisance and this has been affirmed at the Appellate Division. The total damage to plaintiffs' properties is, however, relatively small in comparison with the value of defendant's operation and with the consequences of the injunction which plaintiffs seek.

The ground for the denial of injunction, notwithstanding the finding both that there is a nuisance and that plaintiffs have been damaged substantially, is the large disparity in economic consequences of the nuisance and of the injunction. This theory cannot, however, be sustained without overruling a doctrine which has been consistently reaffirmed in several leading cases in this court and which has never been disavowed here, namely that where a nuisance has been found and where there has been any substantial damage shown by the party complaining an injunction will be granted.

The rule in New York has been that such a nuisance will be enjoined although marked disparity be shown in economic consequence between the effect of the injunction and the effect of the nuisance.

The problem of disparity in economic consequence was sharply in focus in *Whalen v. Union Bag & Paper Co.*, 208 N.Y. 1, 101 N.E. 805. A pulp mill entailing an investment of more than a million dollars polluted a stream in which plaintiff, who owned a farm, was "a lower riparian owner". The economic loss to plaintiff from this pollution was small. This court, reversing the Appellate Division, reinstated the injunction granted by the Special Term against the argument of the mill owner that in view of "the slight advantage to plaintiff and the great loss that will be inflicted on defendant" an injunction should not be granted. "Such a balancing of injuries cannot be justified by the circumstances of this case," Judge Werner noted. He continued: "Although the damage to the plaintiff may be slight as compared with the defendant's expense of abating the condition, that is not a good reason for refusing an injunction."

* * *

Although the court at Special Term and the Appellate Division held that injunction should be denied, it was found that plaintiffs had been damaged in various specific amounts up to the time of the trial and damages to the respective plaintiffs were awarded for those amounts. The effect of this was, injunction having been denied, plaintiffs could maintain successive actions at law for damages thereafter as further damage was incurred.

The court at Special Term also found the amount of permanent damage attributable to each plaintiff, for the guidance of the parties in the event both sides stipulated to the payment and acceptance of such permanent damage as a settlement of all the controversies among the parties. The total of permanent damages to all plaintiffs thus found was \$185,000. This basis of adjustment has not resulted in any stipulation by the parties.

This result at Special Term and at the Appellate Division is a departure from a rule that has become settled; but to follow the rule literally in these cases would be to close down the plant at once. This court is fully agreed to avoid that immediately drastic remedy; the difference in view is how best to avoid it.

One alternative is to grant the injunction but postpone its effect to a specified future date to give opportunity for technical advances to permit defendant to eliminate the nuisance; another is to grant the injunction conditioned on the payment of permanent damages to plaintiffs which would compensate them for the total economic loss to their property present

and future caused by defendant's operations. For reasons which will be developed the court chooses the latter alternative.

If the injunction were to be granted unless within a short period—e.g., 18 months—and the nuisance be abated by improved methods, there would be no assurance that any significant technical improvement would occur.

The parties could settle this private litigation at any time if defendant paid enough money and the imminent threat of closing the plant would build up the pressure on defendant. If there were no improved techniques found, there would inevitably be applications to the court at Special Term for extensions of time to perform on showing of good faith efforts to find such techniques.

Moreover, techniques to eliminate dust and other annoying by-products of cement making are unlikely to be developed by any research the defendant can undertake within any short period, but will depend on the total resources of the cement industry nationwide and throughout the world. The problem is universal wherever cement is made.

For obvious reasons the rate of the research is beyond control of defendant. If at the end of 18 months the whole industry has not found a technical solution a court would be hard put to close down this one cement plant if due regard be given to equitable principles.

On the other hand, to grant the injunction unless defendant pays plaintiffs such permanent damages as may be fixed by the court seems to do justice between the contending parties. All of the attributions of economic loss to the properties on which plaintiffs' complaints are based will have been redressed.

The nuisance complained of by these plaintiffs may have other public or private consequences, but these particular parties are the only ones who have sought remedies and the judgment proposed will fully redress them. The limitation of relief granted is a limitation only within the four corners of these actions and does not foreclose public health or other public agencies from seeking proper relief in a proper court.

It seems reasonable to think that the risk of being required to pay permanent damages to injured property owners by cement plant owners would itself be a reasonable effective spur to research for improved techniques to minimize nuisance.

The power of the court to condition on equitable grounds the continuance of an injunction on the payment of permanent damages seems undoubted. *See, e.g.,* the alternatives considered in *McCarty v. Natural Carbonic Gas Co.*, *supra*, as well as *Strobel v. Kerr Salt Co.*, *supra*.

The damage base here suggested is consistent with the general rule in those nuisance cases where damages are allowed. "Where a nuisance is of such a permanent and unbeatable character that a single recovery can be had, including the whole damage past and future resulting therefrom, there can be but one recovery." 66 C.J.S. Nuisances § 140, p. 947. It has been said that permanent damages are allowed where the loss recoverable would obviously be small as compared with the cost of removal of the nuisance. *Kentucky-Ohio Gas Co. v. Bowling*, 264 Ky. 470, 477, 95 S.W.2d 1 (1936).

* * *

There is some parallel to the conditioning of an injunction on the payment of permanent damages in the noted "elevated railway cases," *Pappenheim v. Metropolitan El. Ry. Co.*, 28 N.E. 518 (N.Y. 1891), and others which followed. Decisions in these cases were based on the finding that the railways created a nuisance as to adjacent property owners, but in lieu of enjoining their operation, the court allowed permanent damages.

* * *

Thus it seems fair to both sides to grant permanent damages to plaintiffs which will terminate this private litigation. The theory of damage is the "servitude on land" of plaintiffs imposed by defendant's nuisance. See *United States v. Causby*, 328 U.S. 256, 261, 262, 267, (1946) where the term "servitude" addressed to the land was used by Justice Douglas relating to the effect of airplane noise on property near an airport.

The judgment, by allowance of permanent damages imposing a servitude on land, which is the basis of the actions, would preclude future recovery by plaintiffs or their grantees. See *Northern Indiana Public Serv. Co. v. W. J. & M. S. Vesey*, *supra*, 200 N.E. 620 (1936).

This should be placed beyond debate by a provision of the judgment that the payment by defendant and the acceptance by plaintiffs of permanent damages found by the court shall be in compensation for a servitude on the land.

* * *

The orders should be reversed, without costs, and the cases remitted to Supreme Court, Albany County to grant an injunction which shall be vacated upon payment by defendant of such amounts of permanent damage to the respective plaintiffs as shall for this purpose be determined by the court.

JASEN, Judge (dissenting).

I agree with the majority that a reversal is required here, but I do not subscribe to the newly enunciated doctrine of assessment of permanent damages, in lieu of an injunction, where substantial property rights have been impaired by the creation of a nuisance.

It has long been the rule in this State, as the majority acknowledges, that a nuisance which results in substantial continuing damage to neighbors must be enjoined. *Whalen v. Union Bag & Paper Co.*, 101 N.E. 805 (1993); *Campbell v. Seaman*, 63 N.Y. 568 (1876); see also, *Kennedy v. Moog Servocontrols*, 21 N.Y.2d 966, 237 N.E.2d 356 (1968). To now change the rule to permit the cement company to continue polluting the air indefinitely upon the payment of permanent damages is, in my opinion, compounding the magnitude of a very serious problem in our State and Nation today.

In recognition of this problem, the Legislature of this State has enacted the Air Pollution Control Act (Public Health Law, Consol.Laws, c. 45, §§ 1264 to 1299-m) declaring that it is the State policy to require the use of all available and reasonable methods to prevent and control air pollution (Public Health Law § 1265).

The harmful nature and widespread occurrence of air pollution have been extensively documented. Congressional hearings have revealed that air pollution causes substantial property damage, as well as being a contributing factor to a rising incidence of lung cancer, emphysema, bronchitis and asthma.

The specific problem faced here is known as particulate contamination because of the fine dust particles emanating from defendant's cement plant. The particular type of nuisance is not new, having appeared in many cases for at least the past 60 years. See *Hulbert v. California Portland Cement Co.*, 161 Cal. 239, 118 P. 928 (1911). It is interesting to note that cement production has recently been identified as a significant source of particulate contamination in the Hudson Valley. This type of pollution, wherein very small particles escape and stay in the atmosphere, has been denominated as the type of air pollution which produces the greatest hazard to human health. We have thus a nuisance which not only is damaging to the plaintiffs, but also is decidedly harmful to the general public.

I see grave dangers in overruling our long-established rule of granting an injunction

where a nuisance results in substantial continuing damage. In permitting the injunction to become inoperative upon the payment of permanent damages, the majority is, in effect, licensing a continuing wrong. It is the same as saying to the cement company, you may continue to do harm to your neighbors so long as you pay a fee for it. Furthermore, once such permanent damages are assessed and paid, the incentive to alleviate the wrong would be eliminated, thereby continuing air pollution of an area without abatement.

It is true that some courts have sanctioned the remedy here proposed by the majority in a number of cases, but none of the authorities relied upon by the majority are analogous to the situation before us. In those cases, the courts, in denying an injunction and awarding money damages, grounded their decision on a showing that the use to which the property was intended to be put was primarily for the public benefit. Here, on the other hand, it is clearly established that the cement company is creating a continuing air pollution nuisance primarily for its own private interest with no public benefit.

This kind of inverse condemnation (*Ferguson v. Village of Hamburg*, 272 N.Y. 234, 5 N.E.2d 801 (1936)) may not be invoked by a private person or corporation for private gain or advantage. Inverse condemnation should only be permitted when the public is primarily served in the taking or impairment of property. *Matter of New York City Housing Auth. v. Muller*, 270 N.Y. 333, 343, 1 N.E.2d 153, 156 (1934); *Pocantico Water Works Co. v. Bird*, 130 N.Y. 249, 258, 29 N.E. 246, 248 (1891). The promotion of the interests of the polluting cement company has, in my opinion, no public use or benefit.

Nor is it constitutionally permissible to impose servitude on land, without consent of the owner, by payment of permanent damages where the continuing impairment of the land is for a private use. See *Fifth Ave. Coach Lines v. City of New York*, 11 N.Y.2d 342-347, 183 N.E.2d 684, 686 (1962); *Walker v. City of Hutchinson*, 352 U.S. 112 (1956). This is made clear by the State Constitution (art. I, § 7, subd.[a]) which provides that “[p]rivate property shall not be taken for *public use* without just compensation” (emphasis added). It is, of course, significant that the section makes no mention of taking for a *private* use.

In sum, then, by constitutional mandate as well as by judicial pronouncement, the permanent impairment of private property for private purposes is not authorized in the absence of clearly demonstrated public benefit and use.

I would enjoin the defendant cement company from continuing the discharge of dust particles upon its neighbors’ properties unless, within 18 months, the cement company abated this nuisance.

It is not my intention to cause the removal of the cement plant from the Albany area, but to recognize the urgency of the problem stemming from this stationary source of air pollution, and to allow the company a specified period of time to develop a means to alleviate this nuisance.

I am aware that the trial court found that the most modern dust control devices available have been installed in defendant’s plant, but, I submit, this does not mean that *better* and more effective dust control devices could not be developed within the time allowed to abate the pollution.

Moreover, I believe it is incumbent upon the defendant to develop such devices, since the cement company, at the time the plant commenced production (1962), was well aware of the plaintiffs’ presence in the area, as well as the probable consequences of its contemplated operation. Yet, it still chose to build and operate the plant at this site.

In a day when there is a growing concern for clean air, highly developed industry should not expect acquiescence by the courts, but should, instead, plan its operations to eliminate contamination of our air and damage to its neighbors.

Accordingly, the orders of the Appellate Division, insofar as they denied the injunction, should be reversed, and the actions remitted to Supreme Court, Albany County to grant an injunction to take effect 18 months hence, unless the nuisance is abated by improved techniques prior to said date.

NOTES

1. The majority decision in *Boomer* imposed a “servitude” on the land. Is Judge Jasen’s dissenting opinion correct in arguing that the majority grants to the Atlantic Cement Company a private right of condemnation in violation of the state constitution?

2. Suppose that following the payment of permanent damages, Congress enacts a law that effectively requires Atlantic Cement Company to abate the nuisance by reducing its emissions substantially. Is the Company entitled to recoup part of its damages? Suppose, in the alternative, that the Company increases its emissions substantially. Can the plaintiffs or their successors in interest take further legal action against the Company?

3. The *Boomer* decision has been criticized in testimony before Congress on the Clean Air Act for taking away all incentives for the Company to reduce emissions. *Air Pollution, 1970, pt. 2: Hearings on S. 3229, S. 3466, and S. 3546 before the Subcomm. on Air and Water Pollution of the Senate Comm. on Public Works, 91st Cong., 849 (1970)* (statement of Edward Lee Rogers, General Counsel, Environmental Defense Fund, Inc.). Some courts have addressed this “incentives” problem by requiring the polluter to use the best available technology to control the pollution. See, e.g., *DeBlois v. Bowers*, 44 F.2d 621, 623 (D. Mass. 1930). Congress has imposed similar technology-based standards on new sources of pollution under the Clean Air Act. See, e.g., §§ 111(a)(1); 165(a)(4). What happens, however, where, as in *Boomer*, the polluter claims to have installed the best available technology, but injury still occurs?

4. The dissenting opinion in *Boomer* suggests that the Court should grant an injunction where a nuisance causes a substantial continuing injury, notwithstanding the possible impacts that an injunction might have on the local economy. Note, however, that Judge Jasen would have structured the relief so as to attempt to force the development of better technological controls, thereby making an injunction unnecessary. “Technology forcing” provisions are another important feature of the Clean Air Act. They have been employed most effectively in the establishment of emissions standards for mobile sources. Clean Air Act § 202. See David P. Currie, *The Mobile Source Provisions of the Clean Air Act*, 46 U. CHI. L. REV. 811, 816-818 (1979).

5. In *McCastle v. Rollins Environmental Services*, 456 So.2d 612 (La. 1984) plaintiffs commenced a class action suit seeking injunctive relief and monetary damages on behalf of approximately 4,000 persons who resided near defendant’s hazardous waste and land farming facility. What problems could the plaintiffs encounter being certified as a class? If the suit can be maintained as a class action, what other problems might occur? See, e.g., *Eisen v. Carlysle & Jacquelin*, 417 U.S. 156 (1974) (requiring “the best notice practicable” to each member of the class). On the merits, will the plaintiffs be entitled to monetary damages. Injunctive relief?

6. *Spur Industries, Inc. v. Del E. Webb Development Co.*, 494 P.2d 700 (Ariz. 1972), presents a classical illustration of the “coming to the nuisance” problem. In *Spur Industries*, the court permanently enjoined the owner of a feedlot from operating near a recently built subdivision under the theory that it was a public nuisance. Nonetheless, as a condition of enforcement of the injunction, the court forced the subdeveloper to indemnify the feedlot operator for the cost of moving his operation. The plaintiff was aware of the feedlot’s existence and repugnant odor at the time that he commenced building, and, as a result, would have received a windfall if the feedlot operation was abated. At common law, a plaintiff who “came to the nuisance” was unable to obtain any relief. *Id.* at 706-707. Today, however, “coming to the nuisance” is merely one element that a court must examine in a nuisance cause of action. Compare RESTATEMENT (SECOND) OF TORTS § 840D (1977): “The fact that the plaintiff has acquired or improved his land after a nuisance interfering with it has come into existence is not in itself sufficient to bar his (nuisance) action, but it is a factor to be considered in determining whether the nuisance is actionable.”

7. Trespass is another possible basis for controlling air pollution through a common law action. In *R.L. Renken v. Harvey Aluminum, Inc.*, 226 F. Supp. 169 (D. Or. 1963), the defendant’s aluminum plant was emitting fluoride and particulates which settled on the plaintiff’s land and fruit trees, causing considerable damage. The court determined that “the continued settling of the fluorides from defendant’s plant on plaintiff’s property constituted a continuing trespass, as a matter of law,” and the court ordered the defendant to install technology, used in similar facilities, to limit the emissions. Unlike the polluter in *Boomer*, the polluter in the *Renken* case was unable to demonstrate that he was using the best available technology. Moreover, the court was convinced that the nearby Reynolds Aluminum plant was using a much more effective pollution control system. The court order essentially required Harvey Aluminum to employ the same kind of system. Note the court’s concern that anything less would put “a premium on air pollution” by giving Harvey a competitive advantage over Reynolds. Suppose the Reynolds technology does not abate the injury to plaintiffs. Should the court require more?

8. Compare the order in *Renken* with the requirement at § 173(a)(2) of the Clean Air Act that major new stationary sources of air pollution in areas that violate current air quality standards meet the “lowest achievable emission rate.” The “lowest achievable emission rate” is defined by law to mean “that rate of emissions which reflects—(A) the most stringent emission limitation which is contained in the implementation plan of any State for such . . . source . . . , or (B) the most stringent emission limitation which is achieved in practice by such . . . source, whichever is more stringent.” § 171(3) (emphasis added).

9. Most of the common law air pollution cases are nuisance actions. In *Renken*, the court found that the settling of pollutants on plaintiff’s property constituted a “continuing trespass.” Which do you think is the better legal theory?

10. Trespass is a common plea in cases involving invasion of air space. The most famous case is *United States v. Causby*, 328 U.S. 256 (1946). In that case the federal government operated a military airport near the plaintiff’s chicken farm. The noise from the planes and the glare from their lights at night so frightened plaintiff’s chickens that they killed themselves flying into the walls of the chicken coop. The plaintiff’s commercial chicken farm was essentially destroyed because “the United States had taken an easement over the property” without just compensation. *Id.* at 259. In awarding damages to the plaintiff for the

government's wrongful invasion of property, the Court expressly rejected the common law notion that ownership of real property extends from the center of the earth to the sky:

It is ancient doctrine that at common law ownership of the land extended to the periphery of the universe—*Cujus est solum est usque ad coelum*. But that doctrine has no place in the modern world. The air is a public highway. . . . Were that not true, every transcontinental flight would subject the operator to countless trespass suits. Common sense revolts at the idea.

Id. at 260-261. The court found, nonetheless, that this principle did not govern the *Causby* case:

We have said that the airspace is a public highway. Yet it is obvious that if the landowner is to have full enjoyment of the land, he must have exclusive control of the immediate reaches of the enveloping atmosphere. Otherwise, buildings could not be erected, trees could not be planted, and even fences could not be run. The principle is recognized when the law gives a remedy in case overhanging structures are erected on adjoining land. The landowner owns at least as much of the space above the ground as he can occupy or use in connection with the land. . . . The fact that he does not occupy it in a physical sense—by the erection of buildings and the like—is not material. As we have said, the flight of airplanes, which skim the surface but do not touch it, is as much an appropriation of the use of land as a more conventional entry upon it. We would not doubt that, if the United States erected an elevated railway over respondents' land at the precise altitude where its planes now fly, there would be a partial taking, even though none of the supports of the structure rested on the land. The reason is that there would be an intrusion so immediate and direct as to subtract from the owner's full enjoyment of the property and to limit his exploitation of it. While the owner does not in any physical manner occupy that stratum of airspace or make use of it in the conventional sense, he does use it in somewhat the same sense that space left between buildings for the purpose of light and air is used. The super adjacent airspace at this low altitude is so close to the land that continuous invasions of it affect the use of the surface of the land itself. We think that the landowner, as an incident to his ownership, has a claim to it and that invasions of it are in the same category as invasions of the surface.

Id. at 264-265.

11. Airplane noise control is now governed by statute under the joint responsibility of the Federal Aviation Administration and the Environmental Protection Agency. *See* Federal Aviation Act of 1958, 49 U.S.C. § 1431 (1988); The Noise Control Act of 1972, 42 U.S.C. §§ 4901-4918 (1988). The Clean Air Act also provides for the establishment of an Office of Noise Abatement and Control within the EPA to investigate and study noise and its effect on the public health and welfare. 42 U.S.C. §§ 7641-7642 (1988). The Supreme Court has held that these statutes pre-empt state and local controls over airplane noise. *City of Burbank v. Lockheed Air Terminal Inc.*, 411 U.S. 624 (1973).

12. Strict liability for carrying on abnormally dangerous activities is another common law legal theory upon which a pollution action might be based. In *T&E Industries, Inc. v. Safety Light Corporation*, 587 A.2d 1249 (N.J. 1991), the plaintiff purchased property on which radioactive waste had been discarded by a predecessor in title. The plaintiff sued the prior owner under a theory of strict liability. The Supreme Court of New Jersey held that

depositing a dangerous product such as radium was an abnormally dangerous activity within the meaning of RESTATEMENT (SECOND) OF TORTS § 520 (1977). Thus the prior owner of the property was liable for the damages to the plaintiff, including clean-up costs. How might this theory be used in the context of air pollution?

13. In *Bradley v. American Smelting and Refining Co.*, (ASARCO) 709 P.2d 782 (Wash. 1985), landowners sued ASARCO seeking damages in trespass and nuisance allegedly caused by “microscopic, air particles of heavy metals” from the company’s copper smelter. The company was in full compliance with federal and state air pollution standards. The Washington Supreme Court nonetheless found that an action in trespass could be maintained. The court found that ASARCO possessed the requisite intent to commit a trespass because it knew or should have known that pollutants from the smelter would fall on private lands. The court further found that a trespass could occur even “when there is no ‘thing’ which can be seen by the naked eye.” *Id.* at 788. But the court held that the traditional common law rule which allowed nominal or punitive damages even where no actual injury occurred should not apply in cases such as these. The Washington Supreme Court’s decision came about as a result of a certification to answer questions of state law from a federal district court in Washington. After receiving these answers to its questions, the federal court ruled in favor of ASARCO on the grounds that the plaintiffs had failed to show sufficient injury. *Bradley v. American Smelting and Refining Co.*, 635 F. Supp. 1154 (W.D. Wash. 1986).

14. In deciding whether or not a person has suffered injury, how should a court assess claims about the latent health risks posed by exposure to toxic substances like heavy metals? For many years the federal courts followed the *Frye* test which held that expert opinion regarding scientific evidence would only be admissible if it was generally accepted as reliable within the relevant scientific community. *Frye v. United States*, 293 F. 1013, 1014 (1923). In *Daubert v. Merrill Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the Supreme Court held that the *Frye* test was displaced by Rule 702 of the Federal Rules of Evidence, which allows experts to offer opinions about “scientific, technical, or other specialized knowledge [if it] will assist the trier of fact to understand the evidence or to determine a fact in issue. . . .” In applying this test, a preliminary assessment must be made to determine “whether the reasoning or methodology underlying the testimony is scientifically valid” and “whether that reasoning or methodology properly can be applied to the facts in issue.” *Id.* at 592-93. The court noted that “[m]any factors will bear on this inquiry” but focused in particular on four: (1) “whether [the scientific knowledge] can be (and has been) tested,” *id.* at 593 (2) “whether the theory and technique has been subjected to peer review and publication,” *id.* at 593, (3) the extent to which the particular scientific technique has a “known or potential rate of error,” *id.* at 594; and (4) whether the techniques have been generally accepted as reliable within the scientific community, *id.* at 594. How significant is the change announced in *Daubert*? Can scientific reasons or methods that have not generally been accepted in the scientific community, nonetheless pass muster under *Daubert*? See *Rubanick v. Witco Chemical Corp.*, 593 A.2d 733, 747-48 (N.J. 1991). *Daubert* has spawned a substantial body of academic literature. See, e.g., G. Michael Fenner, *The Daubert Handbook: The Case, its Essential Dilemma, and its Progeny*, 29 CREIGHTON L. REV. 939 (1996); Edward J. Imwinkelried, *Evidence Law Visits Jurassic Park: The Far-Reaching Implication of the Daubert Court’s Recognition of the Uncertainty of the Scientific Enterprise*, 81 IOWA L. REV. 55 (1995).

GEORGIA V. TENNESSEE COPPER COMPANY
206 U.S. 230 (1907)

Mr. Justice HOLMES delivered the opinion of the Court.

This is a bill in equity filed in this court by the State of Georgia, in pursuance of a resolution of the legislature and by direction of the Governor of the State, to enjoin the defendant Copper Companies from discharging noxious gas from their works in Tennessee over the plaintiff's territory. It alleges that in consequence of such a discharge a wholesale destruction of forests, orchards and crops is going on, and other injuries are done and threatened in five counties of the State. It alleges also a vain application to the State of Tennessee for relief. A preliminary injunction was denied, but, as there was ground to fear that great and irreparable damage might be done, an early day was fixed for the final hearing and the parties were given leave, if so minded, to try the case on affidavits. This has been done without objection, and, although the method would be unsatisfactory if our decision turned on any nice question of fact, in the view that we take we think it unlikely that either party has suffered harm.

The case has been argued largely as if it were one between two private parties; but it is not. The very elements that would be relied upon in a suit between fellow-citizens as a ground for equitable relief are wanting here. The State owns very little of the territory alleged to be affected, and the damage to it capable of estimate in money, possibly, at least, is small. This is a suit by a State for an injury to it in its capacity of quasi-sovereign. In that capacity the State has an interest independent of and behind the titles of its citizens, in all the earth and air within its domain. It has the last word as to whether its mountains shall be stripped of their forests and its inhabitants shall breathe pure air. It might have to pay individuals before it could utter that word, but with it remains the final power. The alleged damage to the State as a private owner is merely a makeweight, and we may lay on one side the dispute as to whether the destruction of forests has led to the gulying of its roads.

The caution with which demands of this sort, on the part of a State, for relief from injuries analogous to torts, must be examined, is dwelt upon in *Missouri v. Illinois*, 200 U.S. 496, 520, 521.

Some peculiarities necessarily mark a suit of this kind. If the State has a case at all, it is somewhat more certainly entitled to specific relief than a private party might be. It is not lightly to be required to give up quasi-sovereign rights for pay; and, apart from the difficulty of valuing such rights in money, if that be its choice it may insist that an infraction of them shall be stopped. The States by entering the Union did not sink to the position of private owners subject to one system of private law. This court has not quite the same freedom to balance the harm that will be done by an injunction against that of which the plaintiff complains, that it would have in deciding between two subjects of a single political power. Without excluding the considerations that equity always takes into account, we cannot give the weight that was given then in argument to a comparison between the damage threatened to the plaintiff and the calamity of a possible stop to the defendants' business, the question of health, the character of the forests as a first or second growth, the commercial possibility or impossibility of reducing the fumes to sulphuric acid, the special adaptation of the business to the place.

It is a fair and reasonable demand on the part of a sovereign that the air over its territory should not be polluted on a great scale by sulphurous acid gas, that the forests on its mountains, be they better or worse, and whatever domestic destruction they have suffered,

should not be further destroyed or threatened by the act of persons beyond its control, that the crops and orchards on its hills should not be endangered from the same source. If any such demand is to be enforced this must be, notwithstanding the hesitation that we might feel if the suit were between private parties, and the doubt whether, for the injuries which they might be suffering to their property, they should not be left to an action at law.

The proof requires but a few words. It is not denied that the defendants generate in their works near the Georgia line large quantities of sulphur dioxide which becomes sulphurous acid by its mixture with the air. It hardly is denied and cannot be denied with success that this gas often is carried by the wind great distances and over great tracts of Georgia land. On the evidence the pollution of the air and the magnitude of that pollution are not open to dispute. Without any attempt to go into details immaterial to the suit, it is proper to add that we are satisfied by a preponderance of evidence that the sulphurous fumes cause and threaten damage on so considerable a scale to the forests and vegetable life, if not to health, within the plaintiff State as to make out a case within the requirements of *Missouri v. Illinois*, 200 U.S. 496. Whether Georgia by insisting upon this claim is doing more harm than good to her own citizens is for her to determine. The possible disaster to those outside the State must be accepted as a consequence of her standing upon her extreme rights.

If the State of Georgia adheres to its determination, there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures that they now are building, and the efforts that they are making, to stop the fumes. The plaintiff may submit a form of decree on the coming in of this court in October next.

Injunction to issue.

[The concurring opinion of Justice Harlan is omitted.]

NOTES

1. The Court suggests that the two Tennessee copper companies sued by the State of Georgia may not force their pollution on Georgia in a manner that adversely affects Georgia's forest resources and the health of its residents. What limits exist on Georgia's right to control pollution coming from a neighboring state? What problems might occur if one state were allowed unfettered authority to control pollution from another state?

2. The Clean Air Act addresses interstate air pollution by allowing states to petition the EPA for a finding that out-of-state air pollution is interfering with the petitioning state's ability to comply with the law. § 126(b); *see also*, § 110(a)(2)(D). States have not met with much success, however, in using this authority to limit out-of-state pollution. *See Transboundary Disputes*, Chapter 6.E., *infra*.

3. The Supreme Court suggests that it might feel "hesitation [about granting an injunction] . . . if the suit were between private parties." Why so? The Court might likewise have had reason to pause if a comprehensive regulatory program like the Clean Air Act had been in place at the time of its decision. Consider these issues as you review the following Clean Water Act case.

INTERNATIONAL PAPER COMPANY V. OUELLETTE

479 U.S. 481 (1987)

Justice POWELL delivered the opinion of the Court.

This case involves the preemptive scope of the Clean Water Act, 33 U.S.C. § 1251 *et seq.* (CWA or Act). The question presented is whether the Act pre-empts a common-law nuisance suit filed in a Vermont court under Vermont law, when the source of the alleged injury is located in New York.

I

Lake Champlain forms part of the border between the States of New York and Vermont. Petitioner International Paper Company (IPC) operates a pulp and paper mill on the New York side of the lake. In the course of its business, IPC discharges a variety of effluent into the lake through a diffusion pipe. The pipe runs from the mill through the water toward Vermont, ending a short distance before the state boundary line that divides the lake.

Respondents are a group of property owners who reside or lease land on the Vermont shore. In 1978 the owners filed a class action suit against IPC, claiming, *inter alia*, that the discharge of effluent constituted a “continuing nuisance” under Vermont common law. Respondents alleged that the pollutants made the water “foul, unhealthy, smelly, and . . . unfit for recreational use,” thereby diminishing the value of their property. The owners asked for \$20 million in compensatory damages, \$100 million in punitive damages, and injunctive relief that would require IPC to restructure part of its water treatment system. The action was filed in State Superior Court, and then later removed to Federal District Court for the District of Vermont.

IPC moved for summary judgment and judgment on the pleadings, claiming that the CWA pre-empted respondents’ state-law suit. With the parties’ consent, the District Judge deferred a ruling on the motion pending the decision by the Court of Appeals for the Seventh Circuit in a similar case involving Illinois and the city of Milwaukee. In that dispute, Illinois filed a nuisance action against the city under Illinois statutory and common law, seeking to abate the alleged pollution of Lake Michigan. *Illinois v. Milwaukee*, 731 F.2d 403 (1984) (*Milwaukee III*), *cert. denied*, 469 U.S. 1196 (1985). The Court of Appeals ultimately remanded the case for dismissal of Illinois’ claim, finding that the CWA precluded the application of one State’s law against a pollution source located in a different State. The decision was based in part on the court’s conclusion that the application of different state laws to a single “point source”¹ would interfere with the carefully devised regulatory system established by the CWA. 731 F.2d at 414. The court also concluded that the only suits that were *not* pre-empted were those alleging violations of the laws of the polluting, or “source,” State. *Id.* at 413-414.

IPC argued that the holding in *Milwaukee III* was dispositive in this case. The Vermont District Court disagreed and denied the motion to dismiss. 602 F. Supp. 264 (1985). The court acknowledged that federal law normally governs interstate water pollution. It found,

¹ A “point source” is defined by the CWA as “any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged.” 33 U.S.C. § 1362(14); *see* 40 C.F.R. § 122.2 (1986). It is not disputed that IPC is a point source within the meaning of the Act.

however, that two sections of the CWA explicitly preserve state-law rights of action. First, § 510 of the Act provides:

“Except as expressly provided . . . , nothing in this chapter shall . . . be construed as impairing or in any manner affecting any right or jurisdiction of the States with respect to the waters (including boundary waters) of such States.”

33 U.S.C. § 1370. In addition, § 505(e) states:

“Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any effluent standard or limitation or to seek any other relief. . . .”

33 U.S.C. § 1365(e).

The District Court held that these two provisions (together, “the saving clause”) made it clear that federal law did not pre-empt entirely the rights of States to control pollution. Therefore the question presented, said the court, was which *types* of state suits Congress intended to preserve. It considered three possibilities: First, the saving clause could be construed to preserve state law only as it applied to waters not covered by the CWA. But since the Act applies to virtually all surface water in the country, the District Court rejected this possibility. Second, the saving clause might preserve state nuisance law only as it applies to discharges occurring within the source State; under this view a claim could be filed against IPC under New York common law, but not under Vermont law. This was the position adopted by the Court of Appeals for the Seventh Circuit in *Milwaukee III*. The District Court nevertheless rejected this option, finding that “there is simply nothing in the Act which suggests that Congress intended to impose such limitations on the use of state law.” 602 F. Supp., at 269.

The District Court therefore adopted the third interpretation of the saving clause, and held that a state action to redress interstate water pollution could be maintained under the law of the State in which the injury occurred. *Id.* The Court was unpersuaded by the concern expressed in *Milwaukee III* that the application of out-of-state law to a point source would conflict with the CWA. It said there was no interference with the procedures established by Congress because a State’s “imposition of compensatory damage awards and other equitable relief for injuries caused . . . merely *supplement* the standards and limitations imposed by the Act.” 602 F. Supp. at 271 (emphasis in original). The Court also found that the use of state law did not conflict with the ultimate goal of the CWA, since in each case the objective was to decrease the level of pollution. *Id.*

The District Court certified its decision for interlocutory appeal, *see* 28 U.S.C. § 1292(b) (1982 & Supp. III), and the Court of Appeals for the Second Circuit affirmed for the reasons stated by the District Court. 776 F.2d 55, 56 (1985) (*per curiam*). We granted certiorari to resolve the circuit conflict on this important issue of federal pre-emption. 475 U.S. 1081 (1986). We now affirm the denial of IPC’s motion to dismiss, but reverse the decision below to the extent it permits the application of Vermont law to this litigation. We hold that when a court considers a state-law claim concerning interstate water pollution that is subject to the CWA, the court must apply the law of the State in which the point source is located.

II

A brief review of the regulatory framework is necessary to set the stage for this case. Until fairly recently, federal common law governed the use and misuse of interstate water.

See, e.g., *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 110 (1938) (water apportionment); *Missouri v. Illinois*, 200 U.S. 496 (1906) (water pollution). This principle was called into question in the context of water pollution in 1971, when the Court suggested in dicta that an interstate dispute between a State and a private company should be resolved by reference to state nuisance law. *Ohio v. Wyandotte Chemicals Corp.*, 401 U.S. 493, 499, n. 3 (1971) (“[A]n action such as this, if otherwise cognizable in federal district court, would have to be adjudicated under state law”) (citing *Erie R. Co. v. Tompkins*, 304 U.S. 64 (1938)).

We had occasion to address this issue in the first of two Supreme Court cases involving the dispute between Illinois and Milwaukee. In *Milwaukee I*, the State moved for leave to file an original action in this Court, seeking to enjoin the city from discharging sewage into Lake Michigan. *Illinois v. Milwaukee*, 406 U.S. 91 (1972). The court’s opinion in that case affirmed the view that the regulation of interstate water pollution is a matter of federal, not state, law, thus overruling the contrary suggestion in *Wyandotte*. 406 U.S., at 102, n. 3. The court was concerned, however, that the existing version of the Act was not sufficiently comprehensive to resolve all interstate disputes that were likely to arise. *Milwaukee I* therefore held that these cases should be resolved by reference to federal common law; the implicit corollary of this ruling was that state common law was pre-empted. See *Id.*, at 107, n. 9; *Milwaukee III*, 731 F.2d at 407. The court noted, though, that future action by Congress to regulate water pollution might pre-empt federal common law as well. 406 U.S. at 107.

Congress thereafter adopted comprehensive amendments to the Act. We considered the impact of the new legislation when Illinois and Milwaukee returned to the court several years later. *Milwaukee v. Illinois*, 451 U.S. 304 (1981) (*Milwaukee II*). There the court noted that the amendments were a “complete rewriting” of the statute considered in *Milwaukee I*, and that they were the “most comprehensive and far reaching” provisions that Congress ever had passed in this area. 451 U.S., at 317-318 (citations to legislative history omitted). Consequently, the court held that federal legislation now occupied the field, pre-empting all federal common law. The court left open the question of whether injured parties still had a cause of action under state law. *Id.* at 310, n. 4. The case was remanded for further consideration; the result on remand was the decision of the Court of Appeals for the Seventh Circuit in *Milwaukee III*, discussed *supra*.

One of the primary features of the 1972 amendments is the establishment of the National Pollutant Discharge Elimination System (NPDES), a federal permit program designed to regulate the discharge of polluting effluent. 33 U.S.C. § 1342; see generally *EPA v. California ex rel. State Water Resources Control Board*, 426 U.S. 200, 205-208 (1976) (describing NPDES system). Section 301(a) of the Act, 33 U.S.C. § 1311(a), generally prohibits the discharge of any effluent into a navigable body of water unless the point source has obtained an NPDES permit from the Environmental Protection Agency (EPA). The permits contain detailed effluent limitations, and a compliance schedule for the attainment of these limitations.

The amendments also recognize that the States should have a significant role in protecting their own natural resources. 33 U.S.C. § 1251(b). The Act provides that the Federal Government may delegate to a State the authority to administer the NPDES program with respect to point sources located within the State, if the EPA Administrator determines that the proposed state program complies with the requirements set forth at 33 U.S.C. § 1342(b). The Administrator retains authority, however, to block the issuance of any permit to which he objects. § 1342(d). Even if the Federal Government administers the permit program, the

source State may require discharge limitations more stringent than those required by the Federal Government. *See* 40 CFR § 122.1(f) (1986). Before the Federal Government may issue an NPDES permit, the Administrator must obtain certification from the source State that the proposed discharge complies with the State's technology-based standards and water-quality-based standards. 33 U.S.C. § 1341(a)(1). The CWA therefore establishes a regulatory "partnership" between the Federal Government and the source State.

While source States have a strong voice in regulating their own pollution, the CWA contemplates a much lesser role for States that share an interstate waterway with the source (the affected States). Even though it may be harmed by the discharges, an affected State only has an advisory role in regulating pollution that originates beyond its borders. Before a federal permit may be issued, each affected State is given notice and the opportunity to object to the proposed standards at a public hearing. 33 U.S.C. § 1341(a)(2); *Milwaukee III, supra*, at 412. An affected State has similar rights to be consulted before the source State issues its own permit; the source State must send notification, and must consider the objections and recommendations submitted by other States before taking action. § 1342(b). Significantly, however, an affected State does not have the authority to block the issuance of the permit if it is dissatisfied with the proposed standards. An affected State's only recourse is to apply to the EPA Administrator, who then has the discretion to disapprove the permit if he concludes that the discharges will have an undue impact on interstate waters. § 1342(d)(2). Also, an affected State may not establish a separate permit system to regulate an out-of-state source. *See* § 1342(b) (State may establish permit system for waters "within *its* jurisdiction") (emphasis added) Thus the Act makes it clear that affected States occupy a subordinate position to source States in the federal regulatory program.

III

With this regulatory framework in mind, we turn to the question presented: whether the Act pre-empts Vermont common law to the extent that law may impose liability on a New York point source. We begin the analysis by noting that it is not necessary for a federal statute to provide explicitly that particular state laws are pre-empted. *Hillsborough County v. Automated Medical Laboratories, Inc.*, 471 U.S. 707, 713 (1985). Although courts should not lightly infer pre-emption, it may be presumed when the federal legislation is "sufficiently comprehensive to make reasonable the inference that Congress 'left no room' for supplementary state regulation." *Id.* (quoting *Rice v. Sante Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)). In addition to express or implied pre-emption, a state law also is invalid to the extent that it "actually conflicts with a . . . federal statute." *Ray v. Atlantic Richfield Co.*, 435 U.S. 151, 158 (1978). Such a conflict will be found when the state law "'stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.'" *Hillsborough County v. Automated Medical Laboratories, Inc., supra*, at 713 (quoting *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941)).

A

* * *

Although Congress intended to dominate the field of pollution regulation, the saving clause negates the inference that Congress "left no room" for state causes of action. Respondents read the language of the saving clause broadly to preserve both a State's right to regulate its waters, 33 U.S.C. § 1370, and an injured party's right to seek relief under "any statute or *common law*," § 1365(e) (emphasis added). They claim that this language and

selected portions of the legislative history compel the inference that Congress intended to preserve the right to bring suit under the law of any affected-State. We cannot accept this reading of the Act.

To begin with, the plain language of the provisions on which respondents rely by no means compels the result they seek. Section 505(e) merely says that “[n]othing in this section,” i.e., the citizen-suit provisions, shall affect an injured party’s right to seek relief under state law; it does not purport to preclude pre-emption of state law by other provisions of the Act. Section 510, moreover, preserves the authority of a State “with respect to the waters (including boundary waters) of such Stat[e].” This language arguably limits the effect of the clause to discharges flowing *directly* into a State’s own waters, i.e., discharges from within the State. The savings clause, then, does not preclude pre-emption of the law of an affected State.

Given that the Act itself does not speak directly to the issue, the Court must be guided by the goals and policies of the Act in determining whether it in fact pre-empts an action based on the law of an affected State. *Cf. City of Rome v. United States*, 446 U.S. 156, 199 (1980) (POWELL, J., dissenting) (“We resort to legislative materials only when the congressional mandate is unclear on its face”). After examining the CWA as a whole, its purposes and its history, we are convinced that if affected States were allowed to impose separate discharge standards on a single point source, the inevitable result would be a serious interference with the achievement of the “full purposes and objectives of Congress.” *See Hillsborough County v. Automated Medical Laboratories, Inc.*, *supra*, at 713. Because we do not believe Congress intended to undermine this carefully drawn statute through a general saving clause, we conclude that the CWA precludes a court from applying the law of an affected State against an out-of-state source.

B

In determining whether Vermont nuisance law “stands as an obstacle” to the full implementation of the CWA, it is not enough to say that the ultimate goal of both federal and state law is to eliminate water pollution. A state law also is pre-empted if it interferes with the methods by which the federal statute was designed to reach this goal. *See Michigan Canners & Freezers Assn. v. Agricultural Marketing & Bargaining Bd.*, 467 U.S. 461, 477 (1984). In this case the application of Vermont law against IPC would allow respondents to circumvent the NPDES permit system, thereby upsetting the balance of public and private interests so carefully addressed by the Act.

By establishing a permit system for effluent discharges, Congress implicitly has recognized that the goal of the CWA—elimination of water pollution—cannot be achieved immediately, and that it cannot be realized without incurring costs. The EPA Administrator issues permits according to established effluent standards and water quality standards, that in turn are based upon available technology, 33 U.S.C. § 1314, and competing public and industrial uses, § 1312(a). The Administrator must consider the impact of the discharges on the waterway, the types of effluents, and the schedule for compliance, each of which may vary widely among sources. If a State elects to impose its own standards, it also must consider the technological feasibility of more stringent controls. Given the nature of these complex decisions, it is not surprising that the Act limits the right to administer the permit system to the EPA and the source States. *See* § 1342(b).

An interpretation of the saving clause that preserved actions brought under an affected State’s law would disrupt this balance of interests. If a New York source were liable for violations of Vermont law, that law could effectively override both the permit requirements

and the policy choices made by the source State. The affected State's nuisance laws would subject the point source to the threat of legal and equitable penalties if the permit standards were less stringent than those imposed by the affected State. Such penalties would compel the source to adopt different control standards and a different compliance schedule from those approved by the EPA, even though the affected State had not engaged in the same weighing of the costs and benefits. This case illustrates the problems with such a rule. If the Vermont Court ruled that respondents were entitled to the full amount of damages and injunctive relief sought in the complaint, at a minimum IPC would have to change its methods of doing business and controlling pollution to avoid the threat of ongoing liability. In suits such as this, an affected state court also could require the source to cease operations by ordering immediate abatement. Critically, these liabilities would attach even though the source had complied fully with its state and federal permit obligations. The inevitable result of such suits would be that Vermont and other States could do indirectly what they could not do directly—regulate the conduct of out-of-state sources.

Application of an affected State's law to an out-of-state source also would undermine the important goals of efficiency and predictability in the permit system. The history of the 1972 amendments shows that Congress intended to establish "clear and identifiable" discharge standards. See S. Rep. No. 92-414, p. 81 (1971), 2 Leg. Hist. 1499. As noted above, under the reading of the saving clause proposed by respondents, a source would be subject to a variety of common-law rules established by the different States along the interstate waterways. These nuisance standards often are "vague" and "indeterminate." The application of numerous States' laws would only exacerbate the vagueness and resulting uncertainty. The Court of Appeals in *Milwaukee III* identified the problem with such an irrational system of regulation:

"For a number of different states to have independent and plenary regulatory authority over a single discharge would lead to chaotic confrontation between sovereign states. Dischargers would be forced to meet not only the statutory limitations of all states potentially affected by their discharges but also the common law standards developed through case law of those states. It would be virtually impossible to predict the standard for a lawful discharge into an interstate body of water. Any permit issued under the Act would be rendered meaningless."

731 F.2d, at 414. It is unlikely—to say the least—that Congress intended to establish such a chaotic regulatory structure.

Nothing in the Act gives each affected State this power to regulate discharges. The CWA carefully defines the role of both the source and affected States, and specifically provides for a process whereby their interests will be considered and balanced by the source State and the EPA. This delineation of authority represents Congress' considered judgment as to the best method of serving the public interest and reconciling the often competing concerns of those affected by the pollution. It would be extraordinary for Congress, after devising an elaborate permit system that sets clear standards, to tolerate common law suits that have the potential to undermine this regulatory structure.

C

Our conclusion that Vermont nuisance law is inapplicable to a New York point source does not leave respondents without a remedy. The CWA precludes only those suits that may require standards of effluent control that are incompatible with those established by the

procedures set forth in the Act. The saving clause specifically preserves other state actions, and therefore nothing in the Act bars aggrieved individuals from bringing a nuisance claim pursuant to the law of the *source* State. By its terms the CWA allows States such as New York to impose higher standards on their own point sources, and in *Milwaukee II* we recognized that this authority may include the right to impose higher common-law as well as higher statutory restrictions. 451 U.S. at 328 (suggesting that “States may adopt more stringent limitations . . . through state nuisance law, and apply them to in-state dischargers”); *see also Committee for Jones Falls Sewage System v. Train*, 539 F.2d 1006, 1009, and n. 9 (CA4 1976) (CWA preserves common law suits filed in source State).

An action brought against IPC under New York nuisance law would not frustrate the goals of the CWA as would a suit governed by Vermont law. First, application of the source State’s law does not disturb the balance among federal, source state, and affected state interests. Because the Act specifically allows source States to impose stricter standards, the imposition of source state law does not disrupt the regulatory partnership established by the permit system. Second, the restriction of suits to those brought under source state nuisance law prevents a source from being subject to an indeterminate number of potential regulations. Although New York nuisance law may impose separate standards and thus create some tension with the permit system, a source only is required to look to a single additional authority, whose rules should be relatively predictable. Moreover, States can be expected to take into account their own nuisance laws in setting permit requirements.

IPC asks the Court to go one step further and hold that all state-law suits also must be brought in source-state *courts*. As petitioner cites little authority or justification for this position, we find no basis for holding that Vermont is an improper forum. Simply because a cause of action is pre-empted does not mean that judicial jurisdiction over the claim is affected as well; the Act pre-emptes laws, not courts. In the absence of statutory authority to the contrary, the rule is settled that a district court sitting in diversity is competent to apply the law of a foreign State.

IV

The District Court correctly denied IPC’s motion for summary judgment and judgment on the pleadings. Nothing in the Act prevents a court sitting in an affected State from hearing a common-law nuisance suit, provided that jurisdiction otherwise is proper. Both the District Court and the Court of Appeals erred, however, in concluding that Vermont law governs this litigation. The application of affected-state laws would be incompatible with the Act’s delegation of authority and its comprehensive regulation of water pollution. The Act pre-emptes state law to the extent that the state law is applied to an out-of-state point source.

The decision of the Court of Appeals is affirmed in part and reversed in part. The case is remanded for further proceedings consistent with this opinion.

It is so ordered.

NOTES

1. The *International Paper* decision was an attempt to resolve a conflict in the circuit courts between the lower court decision in *International Paper* and the Seventh Circuit’s decision following the second remand in *Illinois v. City of Milwaukee*. *See Illinois v. City of*

Milwaukee, 731 F.2d 403 (7th Cir. 1984). What was the conflict between the circuit courts that the Supreme Court had to resolve? As a result of the decision in *International Paper* what continuing role do common law remedies, both state and federal, play in interstate pollution disputes?

2. It is important to recognize that the difficulties created by the *Milwaukee* and *International Paper* decisions have no relevance for common law actions involving purely intrastate disputes. Both the Clean Water Act and the Clean Air Act (as well as a host of other environmental statutes) expressly preserve the rights of persons to maintain common law actions for harm caused by pollution. Compare § 505(e) of the Clean Water Act, 33 U.S.C. § 1365(e), with § 304(e) of the Clean Air Act, 42 U.S.C. § 7604(e). Common law remedies will, however, continue to pose problems for plaintiffs where the defendant's conduct is consistent with specific government standards. The difficult task for the plaintiff's lawyer will be to convince a court that a company which maintains its operation in strict compliance with costly environmental, health, and safety laws, and which provides substantial income and employment for the community, is nonetheless maintaining a nuisance. See, e.g. *New England Legal Foundation v. Costle*, 666 F.2d 30, 33 (2d Cir. 1981) ("Courts traditionally have been reluctant to enjoin as a public nuisance activities which have been considered and specifically authorized by the government").

3. After the Supreme Court's decision, *International Paper* moved for the trial court to dismiss the plaintiff's state common law nuisance claims concerning interstate air pollution from the mill. Applying the Supreme Court's reasoning on the water claims, the trial court held that the plaintiff's nuisance claim for air pollution was not preempted by the Clean Air Act, insofar as it was based on New York law. *Ouellette v. International Paper Co.*, 666 F. Supp. 58 (D. Vt. 1987).

4. As described above, the Clean Water Act and the Clean Air Act both contain provisions expressly preserving common law remedies. Section 304(e) of the Clean Air Act provides as follows:

Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any emission standard or limitation or to seek any other relief (including relief against the Administrator or a State agency)

(Emphasis added). Considering this provision, how did the Supreme Court conclude that the federal common law remedy had been preempted?

5. The Clean Air Act follows a permitting scheme not unlike the scheme for NPDES permits under the Clean Water Act. Under the Clean Air Act, all regulated sources of air pollution are required to obtain permits. § 502(a). States are encouraged to establish their own permitting program, but the EPA retains the right to veto a state decision granting a permit. § 505(b) and (c). Furthermore, for all stationary sources of air pollution, states retain the authority to adopt more stringent standards than those required by federal law. § 116. Thus it seems that common law nuisance actions for air pollution problems remain viable. Nonetheless, as the stringent standards set by the Clean Air Act Amendments of 1990 take hold, it may become increasingly much more difficult to demonstrate that any single source contributes a sufficient amount of air pollution to support a nuisance claim.

II

THE CLEAN AIR ACT

4 THE BIG PICTURE: A SUMMARY OF THE CLEAN AIR ACT

Before the 1990 Amendments, the Clean Air Act was sufficiently complex to overwhelm all but the most persistent students. The 1990 Amendments make the previous law seem simple. Set forth below is a brief review of the Clean Air Act, its history and its most salient features. This summary is by no means comprehensive. Rather it is intended to provide the student with a general understanding of the framework and key components of the law. Because the law forms an intricate web of legal requirements, such an understanding should prove helpful as individual aspects of the law are examined in the ensuing chapters. Students may also find helpful *The Plain English Guide to the Clean Air Act*, which is available on the World Wide Web at http://www.epa.gov/oar/oaqps/peg_caa/pegcaa10.html. The complete text of the Act can be found at http://www.epa.gov/oar/oaq_caa.html.

I. INTRODUCTION AND HISTORY

The Air Pollution Control Act of 1955 was the first federal foray into the air pollution field. It was designed to promote air pollution research under the auspices of the former Department of Health, Education and Welfare (HEW). Regulation of air pollution remained with the states. The Clean Air Act of 1963 provided the Secretary of HEW with limited jurisdiction to regulate interstate air pollution problems, and a full-scale regulatory program was eventually authorized by the Air Quality Act of 1967. It was this law that first focused regulatory efforts on ambient air quality. Implementation of the law, however, remained with the states. Compliance was erratic. See DAVID P. CURRIE, *AIR POLLUTION: FEDERAL LAW AND ANALYSIS* § 8.01 (1981).

The forerunner to the present Clean Air Act was passed in 1970 and coincided with the establishment of the Environmental Protection Agency by the executive order of President Nixon. The 1970 Act entrusted the new agency with the authority to develop and administer plans for achieving compliance with ambient air quality standards in those states lacking adequate plans of their own. Point source controls were also adopted, but applied only to new or modified facilities. Significant amendments were enacted in 1977. Among other things, these amendments provided for the prevention of significant deterioration of clean air areas, and tougher standards for those "nonattainment areas" that remained out of compliance with

the ambient air quality standards. Point source standards, particularly for large stationary sources, were strengthened, but remained largely inapplicable to existing sources of air pollution.

The 1990 Amendments ushered in a whole new era of regulation. While compliance with ambient air quality standards remains a significant goal of the law, that program is now overshadowed by major new programs for new and existing point sources that greatly expand the number of facilities subject to point source regulation.

Set forth below is a six-part summary of the current law. First, national ambient air quality standards (NAAQS) are described. These standards are designed to insure that air quality throughout the United States is adequate to protect public health and the public welfare. Part two discusses the program for preventing the significant deterioration of air quality in those areas of the country that currently meet ambient air quality standards. Part three reviews the Clean Air Act's complex requirements for stationary sources of air pollution. Part four describes the strict inspection and enforcement program for stationary sources. Part five concerns tailpipe emission standards for mobile sources of air pollution, and the regulation of fuels which are burned by such sources. Finally, part six considers the program for limiting the production of air pollutants which are depleting the stratospheric ozone layer.

II. AMBIENT AIR QUALITY STANDARDS AND THE STATE IMPLEMENTATION PLAN PROCESS

As originally enacted in 1970, the Clean Air Act required EPA to establish ambient air quality standards for air pollutants that may endanger public health or welfare and which result from numerous and diverse sources. § 108(a)(1). Primary standards are set to protect public health, allowing an adequate margin of safety; secondary standards are established to protect the public welfare. § 109(b). The pollutants regulated under this program are commonly referred to as "criteria pollutants" because they are established following the publication of air quality criteria which are supposed to reflect "the latest scientific knowledge" about the pollutants and their impact on the public health and welfare. § 108(a)(2). Currently, there are six criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur oxides. *See* 40 C.F.R. Part 50. Of these, ozone is perhaps the most confusing since it is not emitted by sources directly, but rather is formed from a combination of volatile organic compounds (sometimes referred to as VOCs or hydrocarbons), nitrous oxides and sunlight. Note also that the particulate matter standards are often referred to as PM₁₀ and PM_{2.5} to signify that the regulations set standards for particles 10 micrometers or less in size and 2.5 micrometers or less in size. *See* 62 Fed. Reg. 38,652 (1997).

Congress intended that the states assume primary responsibility for meeting the ambient air quality standards. Accordingly, the 1970 law required states to submit for EPA approval a state implementation plan (SIP) that was to provide for the attainment of the primary ambient air quality standards as expeditiously as practicable (but no later than three years after the plan was approved) and of the secondary standards within a reasonable time. § 110(a)(2)(A). States were allowed to adopt whatever mix of controls they desired so long as they were sufficient to attain the ambient air quality standards within the time set out in the statute. The 1970 law was designed to insure compliance with the primary ambient air quality standards by 1975.

By the time of the 1977 Amendments to the Clean Air Act, it was clear that the goal of achieving the primary standards by 1975 had not been met. In 1977, Congress imposed substantially new requirements for those states with "nonattainment areas" in an effort to gain compliance. The revised SIPs mandated by the 1977 Amendments required states with

nonattainment areas to, among other things—(1) incorporate all reasonably available control measures (RACM); (2) require “reasonable further progress” (RFP) (then defined to mean annual incremental reductions of the relevant pollutant); and (3) require existing sources in the area to install reasonable available control technology (RACT). § 172(c)(1). In addition, the 1977 Amendments prohibited the construction of major new sources in nonattainment areas unless those sources offset their emissions by obtaining emissions reductions greater than their contributions. Even where major new stationary sources in nonattainment areas were allowed they are required to use technology that would achieve the lowest achievable emission rate (LAER), which is stringently defined to mean the lower of either the lowest rate achieved by any source or the lowest required by any other state program. §§ 171(3), 173(a)(2). The 1977 Amendments set deadlines of 1982, or in the case of carbon monoxide and ozone, 1987, for achieving the primary ambient air quality standards. Like the 1975 goal, however, these deadlines passed with many areas remaining out of compliance.

Under the 1990 Amendments, the time for achieving the ambient air quality standards now depends upon the pollutant involved and the degree of the problem; for Los Angeles, the area with the nation’s worst ozone pollution problem, attainment is not required until 2010. The new law separately addresses the three pollutants that have caused the most problems for regulators: ozone, carbon monoxide, and particulate matter. Of these, ozone has been the most problematic and receives the most attention.

All *ozone nonattainment areas* under the 1990 Amendments are designated as “marginal,” “moderate,” “serious,” “severe” or “extreme.” § 181(a). Each area is given a certain period of time (from 3-20 years) to achieve the ozone standards and each area is subject to more or less stringent standards depending on the level of noncompliance. The provisions contained in the 1990 Amendments are complex and will be considered in greater detail in Chapter 6. Several examples, however, will help to illustrate how the law works. Moderate ozone nonattainment areas must achieve a 15% reduction in volatile organic compound (VOC) emissions by 1996 (§ 182(b))²; serious areas must achieve the same reduction, plus a reduction of an additional 3% each year thereafter. § 182(c). (Also, a state can combine VOC/NO_x reductions if the same level of ozone reductions will result.) Severe areas must meet the same standards as serious areas. In addition, however, transportation control standards must be implemented as specified in the law, and major new sources must achieve offsets of not less than 1.3 to 1. § 182(d). This means that for every additional pound of VOC contributed by a new source, 1.3 pounds of VOCs must be eliminated generally from the same area. Extreme areas must meet the same standards as severe areas and in addition are subject to offsets for major new sources of not less than 1.5 to 1. § 182(e).

Similar though less onerous standards are established for *CO nonattainment areas* and *PM₁₀ nonattainment areas*. All CO nonattainment areas are designated by law as either moderate or serious. § 186. Moderate areas must achieve the ambient air quality standards by 1996; serious areas must be in compliance by 2001. All PM-10 nonattainment areas are designated in the law as moderate (NAAQS to be achieved by 1995), but they can be redesignated as serious by the Administrator (NAAQS to be achieved by 2002). § 188(a), (b). Nonattainment areas for *sulfur oxides*, *nitrogen dioxide*, and *lead* were required to submit revised plans and achieve full compliance by November 15, 1995. §§ 191, 192.

² This essentially becomes the RFP requirement for moderate areas. See § 171(1).

III. PREVENTION OF SIGNIFICANT DETERIORATION

The 1977 Amendments followed the lead of the Supreme Court in mandating the implementation of a program to prevent the significant deterioration of air quality in those areas that currently exceed the NAAQSs. *Sierra Club v. Ruckelshaus*, 344 F. Supp. 253 (D.D.C. 1972), *aff'd mem.*, 4 ENV'T REP. CASES (BNA) (D.C. Cir.), *aff'd (equally divided court)*; *Fri v. Sierra Club*, 412 U.S. 541 (1973). Under this program, all areas in attainment for sulfur oxides and particulate matter are designated as a Class I, II, or III area for that pollutant. The total additional pollution allowed in these areas is an increment beyond a baseline level which is established at the time of the location of the first major emitting facility in the regulated area. Class I areas are allowed the smallest incremental pollution increases; Class III areas are allowed the largest increases. Similar standards have been established for nitrogen dioxide (*see* 40 C.F.R. § 52.21) and are arguably required for all criteria pollutants. § 166(a).

Under the Act, all areas of a state which meet the NAAQSs are initially designated as Class II except for certain national parks and wilderness areas which are specially designated as Class I areas. Class III areas allow the greatest additional increments of pollution. § 163(b)(3). Under no circumstances, of course, is additional pollution allowed if it will cause the NAAQSs to be exceeded. Lands may be redesignated by the states, or in the case of Indian reservations, by the appropriate Native American governing body. § 164. Certain national resource lands that exceed 10,000 acres in size, including national parks, wilderness areas, and recreation areas may only be redesignated as Class I or Class II areas. § 164(a). Before an area may be redesignated Class III, the local governing bodies representing the majority of the residents in the area must concur in the redesignation. *Id.* Major new facilities in PSD areas must meet special permitting requirements, including the requirement that they use the best available control technology. §§ 162-165. These requirements are described in greater detail below. The PSD provisions were left essentially unchanged by the 1990 Amendments.

A. Baseline Data

As described above, the PSD areas operate to allow an additional increment of pollutants beyond that which is in the ambient air, so long as the addition of such pollutants will not exceed the NAAQSs. Under the statutory definition of "baseline concentration" at § 169(4), the ambient concentration levels from which the increments will be measured are determined as of the date of the first application for a "major emitting facility" in the PSD area. Because the first permit applicant must collect the data necessary to ascertain the ambient concentration levels, this data can be used to establish an accurate baseline. Note, however, that all applicants for a PSD permit must furnish a minimum of one year of continuous monitoring data. § 165(e)(2). The initial applicant may, of course, have to produce more data than can be gathered in a single year if that is necessary to assure reasonable accuracy in the baseline calculations.

In setting these ambient "baseline" concentration levels, EPA must take into account all projected emissions from any major emitting facility on which construction commenced prior to January 6, 1975—the date that the EPA initially promulgated PSD rules. However, SO₂ and particulate emissions from these facilities are *not* included in the baseline, but are counted against the maximum allowable increases in pollution concentrations. § 169(4).

B. Visibility Protection

The Secretary of the Interior, in consultation with other federal land managers, is

required to review all mandatory Federal Class I areas and identify those for which visibility is an important value. Such areas have been identified in 35 states, and the Virgin Islands. The Roosevelt Campobello International Park in New Brunswick, Canada has also been identified for protection under this provision by the Secretary of the Interior. 40 C.F.R. Part 81, Subpart D.

“Major stationary sources” which adversely affect visibility in designated Federal Class I areas, and which commenced operations any time after August 7, 1962, must install and maintain, as expeditiously as practicable, the “best available retrofit technology” (BART) to reduce visibility impairment. New sources that would impact visibility in an identified Federal Class I area are subject to a visibility review. 40 C.F.R. § 51.307. In addition, federal land managers have an affirmative duty to protect the “air quality related values” (AQRVs) (including visibility) of Federal Class I areas. § 165(d)(2)(B). This responsibility could lead to a federal land manager objecting to a new facility even where that facility would not violate the Class I increment. Conversely, a federal land manager may concur in a decision to construct a new facility even where Class I increments are not met, so long as AQRVs are protected and specific increments slightly more stringent than the Class II increments are not violated. *Compare* § 165(d)(2)(c)(ii) and (iii).

C. Visibility Transport Regions

Although there was considerable debate over visibility protection in the discussions leading to the 1990 Amendments, the changes in the law were minimal. The most important change provides for the establishment of interstate visibility transport regions with commissions to study and report on visibility problems associated with these regions. § 169B(c) and (d). The 1990 Amendments also provide substantial funding for studies relating to visibility impairment. § 169B(a).

IV. PERMITS AND OTHER REQUIREMENTS FOR STATIONARY SOURCES

A. General Permitting Authority

Various provisions under the pre-1990 law insured that most large stationary sources held some type of permit. Permit requirements were particularly detailed for major new stationary sources in nonattainment areas (§ 173) and PSD areas (§ 165) and indeed, most large facilities must meet the requirements of both of these programs.³ A “permit or equivalent program” was also required as part of every SIP for major existing sources, but these permits were not subject to any particular requirements or standards (formerly § 110(a)(2)(d)).

The 1990 Amendments add an entirely new and comprehensive permitting program that

³ The designation of an area as a nonattainment area or a PSD area is pollutant specific. Since no area of the country is out of compliance for all of the criteria pollutants, all facilities in a nonattainment area are also in PSD areas. Thus, a facility that meets the definitions of “major emitting facility” for purposes of PSD regulation, and “major stationary source” for purposes of nonattainment area regulation, will generally have to meet the requirements applicable to nonattainment areas for those pollutants for which the area is out of compliance, and PSD areas for those pollutants for which compliance has been achieved.

will affect virtually all stationary sources subject to regulation under the Act.⁴ Thousands of sources that were not required to have permits under the pre-1990 law must now obtain permits that meet the detailed requirements of Title V of the Act and the regulations promulgated by the EPA. 40 C.F.R. Part 70. Set forth below are the basic permitting requirements of the law.

1. *Scope.* Every source regulated under the Act must have a permit. This will include major stationary sources, any regulated hazardous air pollution source, sources subject to new source performance standards (NSPS), and any other class of sources that EPA determines, by rule, should be included in the permit program. § 502(a). "General permits" covering "numerous similar sources" may be issued by the EPA following a rulemaking proceeding. § 504(d). But general permits must comply with all applicable permit requirements of Title V, and sources covered by a general permit must still file a permit application in accordance with § 503 of the Act. *Id.* Permit terms are limited to five years.

2. *Standards.* Permits must contain enforceable emission limitations and/or standards to ensure compliance with all aspects of the law. If a source will not be in full compliance upon issuance of the permit, then the permit must include a compliance plan that includes an enforceable schedule of compliance. § 504(a).

3. *Monitoring.* Permits must include monitoring and reporting requirements, and reports must be filed every six months. Continuous emissions monitoring is not necessarily required, unless required elsewhere under the law as, for example, for sources subject to the acid deposition control program. *Compare* § 412(a) *with* § 504(b).

4. *Permit Fees.* All permitted sources must pay substantial annual fees to the regulatory authority. Fees are initially set at a minimum level of \$25/ton of each regulated pollutant, not to exceed 4,000 tons. Thus, the annual fee may not exceed \$100,000 per pollutant. § 502(b)(3). These fees can be increased if necessary to meet program costs, or decreased if costs for funding the program are lower than the income generated by the fees. Fees will rise over time with the consumer price index.

5. *Permit Shield.* Compliance with a lawful permit is deemed to be compliance with the Act. § 504(f). Nonetheless, any permit for major sources issued for three or more years is subject to revision to reflect new requirements that will become effective before the permit expires. § 502(b)(9). Revisions must be made no later than 18 months after the new requirements become effective.

6. *EPA Rulemaking.* EPA promulgated detailed rules establishing minimum standards for state permitting programs on July 21, 1992. 57 Fed. Reg. 32,250. Among other things, these rules establish standards for: (a) permit applications; (b) permit content; (c) permit issuance and revision; (d) permit review; (e) permit fees; and (f) federal oversight and sanctions. *See generally* § 502(b).

7. *EPA Veto Authority.* EPA must object to the issuance of any permit that is not in compliance with the law. If EPA fails to object, a private party can petition EPA to object on any grounds raised during the public comment period. § 505(b)(2). EPA must grant or deny any such petition within 60 days. EPA must deny any permit where its objections have not been met. § 505(c).

⁴ Similar sources that exist in large numbers may be covered by a general permit. § 504(d). General permits, however, must meet all requirements of the law, and do not relieve the permittee of the application requirements contained in § 503.

B. New Source Performance Standards

1. *Standards of Performance.* The Clean Air Act provides for the establishment of emission standards for *categories or classes* of facilities which the EPA Administrator determines cause or contribute significantly to air pollution. § 111(b)(1)(A).⁵ These requirements apply only to *new sources* which are defined in the Act to mean any *stationary* source, the construction or *modification*⁶ of which was commenced after the promulgation of regulations prescribing “standards of performance” for such source. Thus, a primary lead smelter is considered a *new* source under the law if the construction or modification of that smelter began after October 16, 1974, the date the EPA first promulgated standards of performance for primary lead smelters. See 40 C.F.R. Part 60, Subpart R.

These “standards of performance” are established by EPA to reflect the degree of emission limitations achievable through the application of the best technological system of continuous emission reduction which EPA determines has been adequately demonstrated. In making this determination, EPA must take into account the cost of achieving such emission reduction, any nonair quality health and environmental impacts, and energy requirements. § 111(a)(1). If EPA determines that it is not feasible to prescribe a standard of performance then it may impose a design, equipment, work practice, or operational standard. § 111(h).

2. *Fossil Fuel Fired Stationary Sources.* In order to promote the use of higher sulfur Eastern coal, Congress amended the Clean Air Act in 1977 to provide a dual standard of performance for fossil fuel-fired stationary sources. In addition to the normal “emission limit,” the Act also required a percentage reduction of the emissions from these sources. This served to promote the high sulfur coal industry (primarily in the Eastern United States) by essentially requiring all such facilities to install flue gas desulfurization systems or “scrubbers,” even where they might meet the emission standards without such technology by burning low sulfur coal. The 1990 Amendments repealed the percentage reduction requirement. Clean Air Act Amendments of 1990, Pub. L. No. 101-549, § 403, 104 Stat. 2631 (1990).

C. New Source Review—Major Stationary Sources and Major Emitting Facilities

1. *Definitions.* Before proceeding with this discussion, it is necessary to describe what is certainly one of the more confusing aspects of the law—the definitions of, and occasional distinction between, “major stationary sources” and “major emitting facilities.” Section 302(j) of the Act provides:

Except as otherwise expressly provided, the terms “major stationary source” and “major emitting facility” mean any stationary facility or source of air pollutants

⁵ Thus, for example, EPA has set different standards for iron and steel plants (40 C.F.R. Part 60, Subpart N), primary copper smelters (40 C.F.R. Part 60, Subpart P), and coal preparation plants (40 C.F.R. Part 60, Subpart Y). The NSPS for any particular category of facility may limit its application to facilities of a certain size but NSPS are *not* limited to major emitting facilities or major stationary sources as are some other provisions of the law. As of July 1, 1996, EPA had established NSPS for 76 categories or classes of facilities. 40 C.F.R. Part 60.

⁶ “The term ‘modification’ means any physical change in, or change in the method of operation of a stationary source which increases the amount of any air pollutant emitted by such source, or which results in the emission of any air pollutant not previously emitted.” § 111(a)(4).

which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant . . .

Such sources and facilities include fugitive sources, *i.e.*, non-point sources, as determined by rule by EPA. *Id.* While this definition seems straightforward enough, the Act employs different definitions for each term in different contexts so as to limit the applicability of the general definition. Specifically, the term “major emitting facility” is defined for purposes of the prevention of significant deterioration standards at § 169(1) of the Act to mean any of 27 enumerated plants that emit more than 100 tons/year of any air pollutant, or any other plant that emits more than 250 tons/year of any air pollutant. For purposes of visibility degradation the term “major stationary source” is defined at § 169A to mean any of the same 27 enumerated plants described at § 169(1) but only where such plants emit more than 250 tons/year of any pollutant. No other plants are included in this definition regardless of the amount of their emissions. The principal portion of the law where the general definition at § 302(j) remains relevant is with regard to performance standards for major stationary sources in nonattainment areas.

The 1990 Amendments further add to this confusion by defining the term “major stationary source” to mean a source that emits something less than 100 tons/year for certain classes of ozone and PM-10 nonattainment areas. For example, a major stationary source in a serious ozone nonattainment area is one that emits 50 tons or more per year of VOCs. § 182(c). Also, the statute now employs another similar term, “major source”, which refers to a certain category of sources regulated under the hazardous air pollution program. § 112(a)(1). It is important to remember the nuances in these definitions when reviewing specific permitting requirements under the law.

2. *PSD Areas.* New or modified “major emitting facilities” in PSD areas must obtain a PSD permit. As described previously, such sources must use the “best available control technology” (BACT) to control air pollution. BACT is defined as an *emission limitation* “based on the maximum degree of reduction of each pollutant . . . which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable . . .” § 169(3).

Before a major emitting facility may be constructed in a PSD area certain requirements must be met. In particular, the owner or operator of such a facility must show that it “will not cause, or contribute to, any pollution in excess of” any PSD increment and NAAQS or any other applicable emission standard. § 165(a)(3).

To help the agency make this determination, the applicant must submit a minimum of one year of continuous monitoring data. § 165(e). The EPA must then use modeling techniques to make its predictions regarding PSD compliance. Strict timing and public participation standards apply to the PSD permitting process.

3. *Nonattainment Areas.* A “major (new or modified) stationary source” located in a nonattainment area must obtain a permit consistent with the requirements of § 173 of the Act. Among other things, that section requires such sources to meet the lowest achievable emission rate (LAER). LAER is defined to mean a rate of emissions which reflects either the most stringent emission limit contained in an implementation plan of *any* state for such class or category of source (unless the owner demonstrates that such limits are not achievable), *or* the most stringent emission limit achieved in practice by that category or class, whichever is more stringent. § 171(3). Note that any given plant may have to meet BACT for certain pollutants, and LAER for others. This should occur only where the plant is located in a nonattainment area for some, but not all, of the criteria pollutants. The impact that emissions from the plant

will have on other areas may not be considered in determining the applicable standards. *See Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979).

In addition to LAER, major new stationary sources in nonattainment areas must offset their emissions by obtaining permanent reductions in emissions from other sources in the area. § 173(a)(1). These offsets must be such that total emissions in the area are sufficiently less than the emissions before the location of the new source so as to represent “reasonable further progress” toward compliance as required by the Act. Major new sources must also demonstrate that construction of the new source will not interfere with attainment of the NAAQS, that the nonattainment plan for the area is being adequately implemented, and that an analysis of alternatives for the proposed source demonstrates that the benefits from the source as proposed significantly outweigh its costs.

4. *Modifications.* Although the Act appears to define “modifications” in the same way for purposes of the NSP, PSD and nonattainment area programs (*see, e.g.*, §§ 111(a)(4), 171(4)), in practice, EPA takes a different approach. For purposes of the NSPS program, EPA compares the *hourly* emissions of a facility at its current maximum capacity with its potential emissions at maximum capacity after the change. If the comparison shows an increase, then the change is treated as a modification for purposes of the NSPS program. Under EPA’s regulations, the permit requirements for major stationary sources and major emitting facilities in PSD and nonattainment areas, apply only to new sources and *major modifications* of existing sources. *See* 40 C.F.R. §§ 51.165, 51.166. The determination as to whether a change constitutes a major modification is based upon a comparison of total *annual* emissions before and after the change. If the change would result in “significant” increases in pollutants as defined under EPA’s rules (40 C.F.R. §§ 51.165(a)(1)(x), 51.166(b)(23)), then it is deemed a major modification subject to the PSD and nonattainment area permitting programs. *See Wisconsin Electric Power Company v. Reilly*, 893 F.2d 901 (7th Cir. 1990).

D. Existing Sources

1. *SIP Requirements.* There is no specific requirement that existing sources meet any particular emission level for “criteria pollutants.” Reductions may, however, be required by the SIP as necessary to achieve or maintain the NAAQS. Moreover, in nonattainment areas, the SIP must require all existing sources to achieve emissions reductions based on reasonably available control technology (RACT). RACT is defined as devices, systems, process modifications, or other apparatus or techniques that are reasonably available, taking into account—(1) the necessity of imposing such controls in order to attain and maintain a national ambient air quality standard, (2) the social, environmental, and economic impact of such controls; and (3) alternative means of providing for attainment and maintenance of such standard. 40 C.F.R. § 51.100(o).

2. *Designated Pollutants.* Both new and existing sources must meet emission limits for “designated pollutants” that are established for each class or category of facility under the NSPS program. § 111(a)(1)(B) and (C). However, the state plan may set more lenient emission limits for existing sources, than those established for new sources. § 111(d)(1). Thus, for example, new primary aluminum reduction plants must meet standards for fluoride—a designated pollutant for aluminum reduction plants. 40 C.F.R. § 60.192. The state plan must, accordingly, make some provision for regulating fluoride emissions from existing aluminum reduction plants, although it need not be the same as the NSPS for such plants.

3. *Hazardous Air Pollutants.* Existing sources must also meet standards for hazardous pollutants as described below.

E. The RACT/BACT/LAER Clearinghouse

The 1990 Amendments establish a central data bank of information about various technologies that may qualify as RACT, BACT and/or LAER for particular types of sources. This data bank is designed to assist both the regulated community, the regulators, and the interested public in understanding the current state of air pollution control technology. § 108(h). In addition to providing information about what constitutes RACT, BACT, or LAER for a given source, the clearinghouse will likely provide useful information as EPA attempts to define MACT for various sources of hazardous air pollutants. RACT/BACT/LAER Clearinghouse (RBLC) data base is available on the EPA's Clean Air Technology Center web site. [Http://mapsweb.rtpnc.epa.gov/RBLCWeb/blo2.htm](http://mapsweb.rtpnc.epa.gov/RBLCWeb/blo2.htm)

F. Hazardous Air Pollution Regulation

1. *Background.* Section 112 of the Act provides for the regulation of hazardous air pollutants (HAP). Before its amendment in 1990, this provision required EPA to list as a hazardous air pollutant any air pollutant which might reasonably have been anticipated to result in an increase in mortality or an increase in serious and irreversible, or incapacitating but reversible illness. Once listed, all stationary sources were required to meet health-based emission standards, which were supposed to be set with an ample margin of safety. These standards had to be met regardless of cost. *But see Natural Resources Defense Council v. EPA*, 824 F.2d 1146 (D.C. Cir. 1987) (which allowed considerations of cost in setting an ample margin of safety, but not in initially determining a level that was safe). Despite substantial pressure from Congress, EPA was reluctant to list pollutants under this section because of the anticipated economic impacts of such decisions. As described below, the 1990 Amendments overhaul this provision entirely.

2. *Current Program.* Under the pre-1990 law, EPA had listed only seven hazardous air pollutants. The 1990 Amendments list 189 such pollutants but establish a very different approach to their regulation. § 112(b)(1). (The government was able to compile this list largely as a result of information about hazardous materials which companies furnished in accordance with the Emergency Planning and Community Right to Know Act. 42 U.S.C. § 11001 *et seq.*) This list may be revised at EPA's discretion or as a result of a petition by "any person." § 112(b)(2), (3). EPA must grant or deny a petition within 18 months. EPA "shall add" a pollutant to the list if it "present[s], or may present, . . . a threat of adverse human health effects . . . or adverse environmental effects." § 112(b)(2). Thus, hazardous pollutants are no longer limited to those that may cause a serious illness in humans.

While the 1990 Amendments significantly broadened the scope of the hazardous air pollution section, they also changed the manner in which HAP standards are established. Instead of setting standards based upon adverse impacts on health, the new legislation requires standards to be set for categories or classes of sources of the 189 pollutants, based initially, at least, on feasibility. A two-phase approach to air toxics regulation is employed.

Phase I involves technology-based standards. Within one year after passage of the law, EPA must list all categories or classes of sources which emit one or more pollutants on the list of 189 pollutants. § 112(c). Standards for major sources in each of these categories must then be set at MACT—the maximum achievable control technology. For new sources, the emissions standards established under MACT must be at least as stringent as the "best controlled similar source." For existing sources, MACT must be set at the level of pollution that has been achieved by the best 12% of currently operating similar sources. EPA was required to promulgate MACT standards for 41 sources by November 15, 1992; 25% of the

remaining sources by November 15, 1994; an additional 25% of the remaining sources by November 15, 1997; and all of the remaining sources by November 15, 2000.

Under Phase II, if the residual risk of cancer to the most exposed individual is greater than one in one million after the implementation of MACT standards, EPA must impose more stringent standards to reduce the risk below that level. § 112(f)(1). This must be done within eight years after the promulgation of the original standards.

EPA may limit the application of MACT standards to “major sources” which are defined as sources (or groups of sources) with the potential to emit ten tons per year of any single HAP, or 25 tons per year of any combination of HAPs. § 112 (a)(1). Moreover, EPA has the discretion to differentiate between sizes, classes and types of sources within a particular source category.

Smaller “area sources,” which EPA chooses not to regulate under the MACT standards, remain subject to generally available control technology (GACT). § 112(d)(5). EPA is required to list categories of area sources whenever it finds that such categories present “a threat of adverse effects to human health and the environment . . . warranting regulation under this section.” § 112(c)(3). (Does this last phrase give EPA the discretion to eschew listing even where adverse effects are shown?) In any event, EPA must list categories of area sources representing 90% of area source emissions of the 30 HAPs presenting the greatest threat to public health in urban areas within five years. Regulations controlling emissions from these sources must be promulgated by the year 2000.

3. *Early Reduction Program.* Any source that achieves a 90% reduction of gaseous HAPs, or a 95% reduction of particulate HAPs (based on 1987 emission levels) before new standards are proposed, can obtain a six year extension on compliance. § 112(i)(5).

4. *Accidental Release Program.* The 1990 Amendments create two new programs to address accidental releases of extremely hazardous air pollutants. Section 112(r)(6) provides for establishment of an independent Chemical Safety and Hazard Investigation Board for the purposes of investigating and reporting on any accidental release of extremely hazardous air pollutants that results in death, serious injury or substantial property damage. The Board is also authorized to conduct research and make recommendations to EPA regarding methods for preventing the occurrence and minimizing the consequences of accidental release of extremely hazardous air pollutants. In addition to the Chemical Safety Board’s activities, EPA is required to list at least 100 substances which qualify as extremely hazardous air pollutants (EHAP) and promulgate rules to require certain owners and operators of sources which might release these pollutants to prepare and implement risk management plans to address accidental releases of these substances. § 112(r)(7)(B)(ii).

A second program requires the Occupational Safety and Health Administration, in conjunction with EPA, to establish a program to protect workers from accidental release of “highly hazardous chemicals” in the work place. Clean Air Act Amendments of 1990, Pub. L. No. 101 - 549, § 304(a), 104 Stat. 2576 (1990).

G. Emissions Trading Policy

The Clean Air Act has served as a model for programs designed to achieve more efficient and economical pollution control. Perhaps the most ambitious use of an economic model for pollution regulation is the Acid Deposition Program incorporated into the 1990 Amendments and described in detail below. Well before the 1990 Amendments, however, EPA had developed an emissions trading policy designed to control the costs of pollution control while at the same time encouraging faster compliance. The emissions trading policy has four components; bubbles, netting, emission offsets, and emission reduction credits. The

bubble policy allows existing plants with more than one emission source to treat all such sources as if they were under a bubble encompassing the entire facility with only one stack emanating from the bubble. The bubble policy allows individual sources under the bubble to change their emissions levels without being treated as a modification so long as total emissions from the bubble are not increased. This policy of increasing emissions from one source under the bubble while simultaneously decreasing at least as much of the same pollution from another source is called *netting* and a plant that is able to achieve such a trade is said to “net out” of certain new source review requirements. See Emissions Trading Policy, 51 Fed. Reg. 43,814 (1986), *infra* at Chapter 9.

Emission offsets are pollution rights that are retired in order to allow the construction of major stationary sources in nonattainment areas or major emitting facilities in PSD areas where the new facility would exceed the applicable PSD increment for that area. *Emission reduction credits* (ERCs) are “the common currency of all trading activity.” Only those ERCs which are surplus, enforceable, permanent and quantifiable may be used in emission trades. ERCs may also be banked for future sale or use.

H. Acid Deposition Control

One of the chief flaws in the pre-1990 law was its failure to provide adequate regulation of existing sources of air pollution. Most of the significant air pollution control provisions of the law applied only to major new or modified sources. Through their SIPs, states could impose controls on existing sources, but political pressure made it difficult to assure that these sources were adequately regulated. This gave the owners of existing sources a tremendous incentive to keep their old facilities on line. Existing sources in nonattainment areas were required to employ reasonably available control technology (RACT), but this is the least restrictive of the technology-based standards under the law and often resulted in continuing high levels of air emissions. Moreover, for existing sources in PSD areas the only controls imposed were set in the SIPs.⁷

The failure to address existing sources of air pollution was particularly troublesome as it related to electric utilities. Many utilities had gone on line before the Clean Air Act requirements became applicable to them, and the prospect of strict regulation under the Clean Air Act provided a powerful incentive against modernization. Moreover, transboundary air pollution problems, which were becoming increasingly serious, were largely a product of the SO₂ and NO_x pollution from these large utilities.

The 1990 Amendments addressed this problem with an innovative new program designed to achieve a 10 million ton/year reduction of SO₂ emissions, and a 2 million ton/year reduction in NO_x emissions from 1980 levels. As described below, this two-phased program is directed primarily at electric utilities, though other sources of SO₂ emissions may “opt in” to the program.

1. *SO₂ Reductions.* “Affected units” are those facilities subject to the emission

⁷ Existing sources were also subject to hazardous air pollution standards and to controls on designated pollutants—those that were neither hazardous air pollutants nor criteria pollutants, but which were regulated under the NSPS program. See § 111(d). An example of a designated pollutant is fluoride from aluminum reduction plants. Fluoride is not listed as a hazardous air pollutant in the list of 189 HAPs in § 112. Nonetheless, it plainly qualifies as such a pollutant under the expanded definition of that term, and it will be interesting to see whether the hazardous air pollution section eventually renders § 111(d) superfluous.

reduction provisions of Title IV. During Phase I this includes 111 existing utility sources of SO₂ which exceed 2.5 lbs/mmBtu as set out in Table A of § 404 of the Act. During Phase II, this includes all commercial facilities (of 25 MW or more) in existence when the law was passed.

Phase I grants allowances (one ton of pollution for each allowance) to 111 existing sources in the East and Midwest (Kansas is the farthest West) at a level of 2.5 lbs/mmBtu. § 404. (This is more than double the long-standing NSPS for fossil fuel fired power plants. See 40 C.F.R. § 60.43a(a)). Phase I took effect in January of 1995.

Phase II will come into operation in the year 2000. During this phase, all existing sources of 25 MW or more will receive allowances based upon a maximum rate of 1.2 lbs/mmBtu. (This is the current maximum NSPS for fossil fuel-fired steam generators. 40 C.F.R. § 60.43a(a)). Power plants with lower emissions will generally be awarded allowances based upon their 1985 emissions. EPA may not issue allowances that will allow annual emissions to exceed 8.9 million tons of SO₂, although certain provisions are made for bonus allowances.

All sources must hold allowances equal to emissions, but allowances may be bought and sold on the Chicago Board of Trade, and may be traded internally among the power plants owned by a single entity. EPA also holds auctions for allowances. Source operators are fined \$2,000 for each ton of emissions in excess of the allowance. § 411(a). (Over the past couple of years, allowance prices have hovered at or below the \$100 range.) Companies can also get energy conservation and renewable energy allowances, and states can get bonus allowances if their average emissions are below .8 lbs/mmBtu. § 406. Cleaner plants (better than 1.2 lbs/mmBtu) will receive 20% more allowances than their baseline. § 405(d). New units cannot go on line until they have acquired sufficient allowances to account for their emissions. § 403(c).

Continuous emissions monitoring systems (CEMS) are required on all units that are subject to the acid deposition control program. § 412(a). The availability of CEMS data should make citizen suits for enforcement of violations much easier to bring. In this way, the CEMS data will serve the function of discharge monitoring reports under the Clean Water Act.

2. *NO_x Reductions.* The proposed NO_x reductions will be handled under more conventional provisions. The 1990 Amendments required EPA to revise the NSPS for fossil-fuel-fired steam generators based upon low NO_x burner technology by 1994. § 407(c). Standards must be adopted for all types of boilers by 1997. § 407(b)(2). In addition, existing facilities which are affected units for purposes of the SO₂ reduction program must meet certain emission limits set out in the law. § 407(b)(1).

V. INSPECTIONS AND ENFORCEMENT

A. Background

Long before the 1990 Amendments, the enforcement provisions of the Clean Air Act had proved inadequate. In particular, the EPA was hampered by its inability to seek civil penalties for violations of the law without either going to court or engaging in the cumbersome process of assessing "economic benefit" "noncompliance" penalties under § 120. The 1990 Amendments corrected this problem, and added substantial new weapons to EPA's enforcement arsenal.

B. 1990 Amendments

1. *Inspections.* Section 114(a)(2) grants EPA broad authority to inspect sites subject

to the Act. EPA's inspection authority has not changed significantly as a result of the 1990 Amendments with one important exception. Under § 114(a)(3), major stationary source operators are required to perform enhanced monitoring and submit "compliance certifications" which provide assurance that the facility is meeting applicable performance standards. Persons concerned about noncompliance will, for the first time, have ready access to compliance information.

2. *Civil Penalties.* Under new § 113(b), EPA may assess civil penalties of up to \$25,000 per day for certain specified violations of the Act. (Total penalties under this provision, however, may not exceed \$200,000 unless a joint determination is made by EPA and the Attorney General to exceed that amount.) Penalties may be assessed for both present and past violations that occurred not more than 12 months prior to the assessment date. All penalties assessed under § 113(b) are in addition to penalties that may be assessed under § 120 (which is designed solely to remove any economic benefit that an operator may receive from noncompliance). The criteria for penalty assessment are set out at § 113(e). EPA may initiate civil actions and recover penalties for past violations that are no older than five years.

If any person fails to pay a final assessment, EPA must ask the Attorney General to collect the assessment. The alleged violator may not challenge the fact of the violation or the assessment amount in this proceeding. Judicial review of an EPA penalty assessment is available in federal district court, but only if filed within 30 days from the date that the administrative penalty order becomes final. § 113(d)(4). Furthermore, the violator is subject to payment of the assessment, appropriate interest, a 10% "failure to pay" penalty, and the government's costs and expenses incurred in collecting the penalty, including attorney fees. § 113(d)(5).

3. *Field Citations.* EPA is authorized to implement a field citation program that would allow federal inspectors to issue "traffic tickets" for minor violations of the Act. Fines for such citations may not exceed \$5,000. § 113(d)(3). Rules must be promulgated before this authority can be exercised.

4. *Criminal Penalties.* The 1990 Amendments make it much easier to impose criminal sanctions on violators. Any person who "knowingly" violates one of several enumerated provisions of the law may be punished by a fine and imprisonment not to exceed five years. Knowing releases of hazardous air pollutants, however, can lead to a fine and prison sentence of up to 15 years. Negligent releases of HAPs may result in a fine and imprisonment for up to one year.

The legislative history makes clear that "responsible corporate officers" can be held liable for "knowing" violations simply by showing that the officer was aware that the act or omission was committed. The government need not show that the officer knew that the act was unlawful. (A responsible employee, by contrast, can be held liable only if the government can show that the employee knew that the act was unlawful.)

The strict standards to which corporate officers are held could be construed by some to discourage self-audits. The legislative history makes clear, however, that information obtained through a self-audit should not ordinarily form the basis for a criminal action. *See* 136 Cong. Rec. 13,201 (1990).

5. *"Bounties."* The 1990 Amendments authorize rewards to persons who furnish information leading to a criminal conviction or a criminal or civil penalty. The reward may not exceed \$10,000. § 113(f).

6. *Public Participation in Settlements.* The Amendments afford the public a 30-day comment period on consent orders or settlement agreements before such documents are allowed to become final. § 113(g).

7. *Citizen Suits*. The 1990 Amendments allow citizens to sue for wholly past violations if the violation has been repeated. § 304(a)(1). This was previously not allowed as a result of the Supreme Court's decision in *Gwaltney of Smithfield Ltd. v. Chesapeake Bay Foundation, Inc.*, 484 U.S. 49 (1987).

8. *Government Contractors*. Before 1990, the federal government could not contract for the procurement of goods or services from a facility in violation of the law. The 1990 Amendments extend this provision to any facility owned or operated by the violator. § 306(a).

9. *Permit Fees*. Although it does not concern enforcement directly, the most significant enforcement provision contained in the Clean Air Act may very well be the fee provisions for permits imposed by the 1990 Amendments. Since the law requires the regulatory agency to recoup the costs of administering and enforcing the program, state agencies will have a much more stable source of funding. As a result, more aggressive enforcement of the law seems inevitable.

VI. MOBILE SOURCES AND FUEL STANDARDS

Section 202 of the Act sets tailpipe emission standards for motor vehicles which must be met during their useful life. Elaborate testing procedures are also established to be certain that new and used vehicles meet those standards. Manufacturers must pay nonconformance penalties for vehicles that fail to meet federal standards. Among other things, these penalties must be high enough to remove any competitive advantage received by the company for non-compliance. § 206(g). The 1990 Amendments established more stringent tailpipe emission standards for hydrocarbons and NO_x. They also—(1) required the use of reformulated (clean) gasoline in the nine worst ozone nonattainment areas (extreme and severe areas) by January 1, 1995 (§ 219); (2) banned the sale of leaded gasoline by the end of 1995 (§ 211(a)); and (3) provided for the regulation of toxic air pollutants from motor vehicles (particularly benzene and formaldehyde). In addition, the useful life of vehicles is extended, in most cases, from five years and 50,000 miles to ten years or 100,000 miles for any new requirements that are imposed after the 1990 Amendments. § 202(d)(1). Testing, however, will be limited to seven years or 75,000 miles, whichever occurs first. *Id.*

EPA may also require the registration and testing of fuels and fuel additives before their introduction into commerce, and may regulate, control or prohibit fuels on the market that may endanger public health or impair the operation of emission control devices. § 211.

VII. STRATOSPHERIC OZONE PROTECTION

The 1977 Amendments supported research and studies that were deemed necessary to understand the causes and effects of ozone layer depletion.⁸ In 1987, many countries, including the United States, signed a treaty known as the *Montreal Protocol*, establishing international standards for controlling the emission of ozone depleting substances. The *Protocol* was adopted under the 1985 *Vienna Convention for the Protection of the Ozone Layer*, and as of Mid-1994, 136 countries had become parties to the Protocol.

Title VI of the 1990 Amendments was basically intended to implement the *Montreal*

⁸ The stratosphere is the second layer of the atmosphere. It begins at approximately 10 kilometers above sea level and extends to approximately 50 kilometers above sea level. The troposphere, or lower layer of the atmosphere, extends from 0-10 kilometers above sea level. As described previously, tropospheric ozone can harm the public health and welfare; in the stratosphere, however, ozone serves the important function of blocking ultraviolet radiation.

Protocol as it relates to U.S. emissions. Essentially, this title requires that the production of all substances listed as Class I substances be phased out by the year 2000. Methyl chloride production must be phased out by 2002. Class II substances (which are thought to be less significant ozone depleters) must be phased out by 2030. In addition, the 1990 Amendments establish requirements for warning labels for products containing ozone depleting substances, for the federal procurement of ozone depleting substances, and recycling of such substances.

Since passage of the 1990 Amendments, new evidence has become available supporting an accelerated schedule for phasing out various ozone-depleting chemicals. Several amendments and adjustments to the *Protocol* have been adopted that take account of this evidence. Current information about the status of international agreements on ozone layer depletion can be found on the *Montreal Protocol* home page at <http://acd.vacr.edu/gpdf/ozone/mp/index.html>.

5 NATIONAL AMBIENT AIR QUALITY STANDARDS

NATURAL RESOURCES DEFENSE COUNCIL, INC. v. TRAIN

545 F.2d 320 (2d Cir. 1976)

J. JOSEPH SMITH, Circuit Judge:

The Environmental Protection Agency, ("EPA"), and its Administrator, Russell Train, appeal from an order of the United States District Court for the Southern District of New York, Charles E. Stewart, Jr., Judge, . . . requiring the Administrator of the EPA, within thirty days, to place lead on a list of air pollutants under § 108(a)(1) of the Clean Air Act, as amended, ("the Act"). We affirm the order of the district court.

The 1970 Clean Air Act Amendments provide two different approaches for controlling pollutants in the air. One approach, incorporated in §§ 108-110, provides for the publication of a list of pollutants adverse to public health or welfare, derived from "numerous or diverse" sources, the promulgation of national ambient air quality standards for listed pollutants, and subsequent implementation of these standards by the states. The second approach of the Act provides for control of certain pollutants at the source, pursuant to §§ 111, 112, 202, 211 and 231.

The relevant part of § 108 reads as follows:

(a)(1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant—

- (A) which in his judgment has an adverse effect on public health or welfare;
- (B) the presence of which in the ambient air results from numerous or diverse mobile or stationary sources; and
- (C) for which air quality criteria had not been issued before December 31, 1970, but for which he plans to issue air quality criteria under this section.

Once a pollutant has been listed under § 108(a)(1), §§ 109 and 110 of the Act are automatically invoked. These sections require that for any pollutant for which air quality criteria are issued under § 108(a)(1)(C) after the date of enactment of the Clean Air Amendments of 1970, the Administrator must simultaneously issue air quality standards. Within nine months of the promulgation of such standards, states are required to submit implementation plans to the Administrator. § 110(a)(1). The Administrator must approve or disapprove a state plan within four months. § 110(a)(2). If a state fails to submit an acceptable plan, the Administrator is required to prepare and publish such a plan himself. § 110(c). State implementation plans must provide for the attainment of primary ambient air quality standards no later than three years from the date of approval of a plan. § 110(a)(2)(A)(i). Extension of

the three-year period for attaining the primary standard may be granted by the Administrator only in very limited circumstances, and in no case for more than two years. § 110(e).

The EPA concedes that lead meets the conditions of § 108(a)(1)(A) and (B)—that it has an adverse effect on public health and welfare, and that the presence of lead in the ambient air results from numerous or diverse mobile or stationary sources. The EPA maintains, however, that under § 108(a)(1)(C) of the Act, the Administrator retains discretion whether to list a pollutant, even though the pollutant meets the criteria of §§ 108(a)(1)(A) and (B). The EPA regards the listing of lead under § 108(a)(1) and the issuance of ambient air quality standards as one of numerous alternative control strategies for lead available to it. Listing of substances is mandatory, the EPA argues, only for those pollutants for which the Administrator “plans to issue air quality criteria.” He may, it is contended, choose not to issue, i. e., *not* “plan to issue” such criteria, and decide to control lead solely by regulating emission at the source, regardless of the total concentration of lead in the ambient air. The Administrator argues that if he chooses to control lead (or other pollutants) under § 211, he is not required to list the pollutant under § 108(a)(1) or to set air quality standards.

The EPA advances three reasons for the position that the Administrator has discretion whether to list a pollutant even when the conditions of § 108(a)(1)(A) and (B) have been met: the plain meaning of § 108(a)(1)(C); the structure of the Clean Air Act as a whole; and the legislative history of the Act.

The issue is one of statutory construction. We agree with the district court and with appellees, National Resources Defense Council, Inc., et al., that the interpretation of the Clean Air Act advanced by the EPA is contrary to the structure of the Act as a whole, and that if accepted, it would vitiate the public policy underlying the enactment of the 1970 Amendments as set forth in the Act and in its legislative history.

* * *

I. SECTION 108(A)(1) AND THE STRUCTURE OF THE CLEAN AIR ACT

Section 108(a)(1) contains mandatory language. It provides that “the Administrator *shall* . . . publish . . . a list . . .” (emphasis added). If the EPA interpretation were accepted and listing were mandatory only for substances “for which [the Administrator] plans to issue air quality criteria . . .”, then the mandatory language of § 108(a)(1)(A) would become mere surplusage. The determination to list a pollutant and to issue air quality criteria would remain discretionary with the Administrator, and the rigid deadlines of § 108(a)(2), § 109, and § 110 for attaining air quality standards could be bypassed by him at will. If Congress had enacted § 211 as an alternative to, rather than as a supplement to, §§ 108-110, then one would expect a similar fixed timetable for implementation of the fuel control section. The absence of such a timetable for the enforcement of § 211 lends support to the view that fuel controls were intended by Congress as a means for attaining primary air quality standards rather than as an alternative to the promulgation of such standards.

* * *

The EPA contention that the language of § 108(a)(1)(C) “for which [the Administrator] plans to issue air quality criteria” is a separate and third criterion to be met before § 108 requires listing lead and issuing air quality standards, thereby leaving the decision to list lead within the discretion of the Administrator, finds no support in the legislative history of the 1970 Amendments to the Act. The summary of the provisions of the conference agreement furnished the Senate by Senator Muskie contain the following language:

The agreement requires issuance of remaining air quality criteria for major pollutants within 13 months of date of enactment.

and

Within the 13-month deadline, the Congress expects criteria to be issued for nitrogen oxides, fluorides, lead, polynuclear organic matter, and odors, though others may be necessary.

* * *

Language relating to the issuance of new source performance standards makes it clear that the Senate intended these standards to be supplementary to, not in lieu of, ambient air quality standards.

* * *

While the literal language of § 108(a)(1)(C) is somewhat ambiguous, this ambiguity is resolved when this section is placed in the context of the Act as a whole and in its legislative history. The deliberate inclusion of a specific timetable for the attainment of ambient air quality standards incorporated by Congress in §§ 108-110 would become an exercise in futility if the Administrator could avoid listing pollutants simply by choosing not to issue air quality criteria. The discretion given to the Administrator under the Act pertains to the review of state implementation plans under § 110, and to § 211 which authorizes but does not mandate the regulation of fuel or fuel additives. It does not extend to the issuance of air quality standards for substances derived from specified sources which the Administrator had already adjudged injurious to health.

* * *

The structure of the Clean Air Act as amended in 1970, its legislative history, and the judicial gloss placed upon the Act leave no room for an interpretation which makes the issuance of air quality standards for lead under § 108 discretionary. The Congress sought to eliminate, not perpetuate, opportunity for administrative foot-dragging. Once the conditions of §§ 108(a)(1)(A) and (B) have been met, the listing of lead and the issuance of air quality standards for lead become mandatory.

The order of the district court is affirmed.

NOTES

1. In the *NRDC* case, EPA argued that listing lead under the ambient air quality standards was “one of numerous alternative control strategies for lead available to it.” What are the other principal control strategies available to EPA under the Act? See §§ 202, 211. Consider that, according to EPA estimates, 88 percent of the total lead emissions in this country come from motor vehicle exhaust.

2. National ambient air quality standards are “rules” within the meaning of the Administrative Procedure Act (5 U.S.C. §§ 551, 552, 553), but, the Clean Air Act sets its own detailed procedural requirements for rulemaking actions, which supplement those found in the APA. § 307(d). Among other things, § 307(d) requires the EPA to establish and maintain a rulemaking docket containing all documents of central relevance to the proceeding. § 307(d)(2). Furthermore, the proposed rules must contain a statement of basis and purpose

that summarizes: (a) the factual data on which the proposed rule is based; (b) the methodology used in obtaining and analyzing the data; and (c) the major legal interpretations and policy considerations underlying the proposed rule. § 307(d)(3). (A similar requirement is made only for final rules under the APA. See 5 U.S.C. § 553.) The rulemaking docket must include all documents and comments pertinent to the rule, including all written comments, data and other information that may be submitted by any person. The final rule must be accompanied by responses to significant comments, criticisms, and new data (§ 307(d)(6)(B)), and cannot be based on any information or data not placed in the rulemaking docket as of the date of promulgation. § 307(d)(6)(C). See *American Petroleum Institute v. Costle*, 609 F.2d 20 (D.C. Cir. 1979) (The “date of promulgation” means the date the rule is signed and announced to the public and not the date it is published in the Federal Register). Further, the record for judicial review is limited to the material in the docket, and only those objections to the rule raised during the public comment period for the rulemaking may be raised during judicial review. § 307(d)(7). National regulations promulgated under the Clean Air Act may be challenged only in the U.S. Court of Appeals for the District of Columbia Circuit. Actions affecting particular states, however, must generally be filed in the Court of Appeals for the appropriate Circuit. § 307(b)(1). Note that these special rulemaking requirements of the Clean Air Act were adopted in 1977, and thus, were not applicable to the proceedings at issue in the *NRDC* case.

3. Despite the strict procedural requirements for rulemaking proceedings under the Clean Air Act, it may be difficult to overturn a rule on the grounds that EPA failed to follow those requirements. Section 307(d)(8) states that “a court may invalidate [a] rule only if the [procedural] errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made.” This provision was invoked by the court to sustain a rule in *Union Oil Co. of California v. EPA*, 821 F.2d 678, 683-84 (D.C. Cir. 1987); but see, *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 544 (D.C. Cir. 1983) (§ 307(d)(8) does not override the duty to reverse a rule where the agency failed to satisfy the requirements of the APA).

4. Currently, there are six “criteria” pollutants for which national ambient air quality standards have been established. They are: sulfur dioxide (40 C.F.R §§ 50.4 - 50.5); particulates (40 C.F.R §§ 50.6); carbon monoxide (40 C.F.R § 50.8); ozone (40 C.F.R § 50.9); nitrogen dioxide (40 C.F.R § 50.11); and lead (40 C.F.R § 50.12). Ozone was formerly regulated within the broader category of “photochemical oxidants.” Hydrocarbons had been listed separately, but are now controlled through the ozone standard because their health impact results from ozone formation which is caused by the mixture of nitrous oxides and hydrocarbons in sunlight. Many individual hydrocarbon compounds, such as benzene, carbon tetrachloride, and methanol, are also listed as hazardous air pollutants and are also regulated in accordance with § 112. See *infra*, at Chapter 9.

5. The 1977 Amendments added § 109(d) which requires the Administrator to review and, if necessary, revise the NAAQS every five years. 42 U.S.C. § 7409(d)(1). In *Environmental Defense Fund v. Thomas*, 870 F.2d 892 (2d Cir. 1989), *cert. denied, sub nom. Alabama Power Co. v. EDF*, 493 U.S. 991 (1989), the plaintiffs challenged the Administrator’s failure to revise the NAAQS for sulfur oxides (SO_x), the major cause of acid deposition. The plaintiffs originally brought their action under § 304 of the Clean Air Act, which allows citizens to bring suits in a district court against the Administrator for a “failure

of the Administrator to perform any act or duty . . . which is not discretionary. . . .” § 304(a)(2). The U.S. District Court for the Southern District of New York dismissed the plaintiff’s action for lack of jurisdiction, holding that the revision of NAAQS by the Administrator was a discretionary function, and thus, the Court of Appeals for the District of Columbia had exclusive jurisdiction over the matter under § 307. Section 307(b) vests the Court of Appeals for the District of Columbia Circuit with exclusive jurisdiction to review final rules and other “final action[s]” by the Administrator. On appeal, the Court of Appeals for the Second Circuit reversed, holding that the duty to make *some* decision regarding the revision of the NAAQS was non-discretionary, and thus was enforceable by the district court in accordance with § 304(a)(2). Nonetheless, the court found that the district court could not order the Administrator to revise the NAAQS, because “[t]he substance of the Administrator’s decision is beyond the power of the district court. . . . An order to revise would thus plunge the district court into the merits, matters that are the exclusive province of the District of Columbia Circuit.” 870 F.2d at 896. The Second Circuit’s decision allows a plaintiff to shop for a convenient forum to force the Administrator to make a decision regarding the revision of the NAAQS within the statutory time limits set out in § 109(d). Challenges to the Administrator’s decision itself, however, will have to be filed in the Court of Appeals for the District of Columbia Circuit.

6. The EPA has often failed to meet the requirement of § 109(d)(1) that the Administrator review and, if necessary, revise the NAAQS every five years. A series of lawsuits, spearheaded by the American Lung Association have met with some success in forcing compliance with this requirement as regards ozone, sulfur oxides and particulate matter. See, e.g., *American Lung Association v. Browner*, 884 F. Supp. 345 (D. Ariz. 1994) (particulate matter); *American Lung Association v. Reilly*, 141 F.R.D. 29 (E.D.N.Y. 1992) (ozone); *American Lung Association v. Browner* 92-CIV-5316 (E.D.N.Y.) (sulfur oxides) (cited and discussed at 59 Fed. Reg. 58,962 (1994)). See also *Environmental Defense Fund v. Thomas*, 870 F.2d 892, 900 (2d Cir. 1989) (Administrator does not have non-discretionary duty to revise NAAQS every four years, but does have a non-discretionary duty “to take some formal action, employing rulemaking procedures, either revising NAAQS or declining to revise them”).

7. On May 22, 1996, the EPA published final rules in which it decided not to make significant changes to the sulfur oxides standards. 61 Fed. Reg. 25,566 – 25,580. The measurement standard was changed from $\mu\text{gm}/^3$ to parts per million (ppm), but the SO_2 levels authorized by the rules remain the same. The primary standard is 0.14ppm ($365 \mu\text{g}/\text{m}^3$) averaged over 24 hours (not to be exceeded more than once), and 0.030 ppm ($80 \mu\text{g}/\text{m}^3$) averaged annually. A secondary three-hour standard of 0.5 ppm ($1300 \mu\text{g}/\text{m}^3$) averaged over three hours (not to be exceeded more than once) was also retained. The EPA also used the rulemaking to clarify that averages were to be computed only over sequential blocks of time. Thus the 24-hour average runs from midnight to midnight and may not be measured over any 24-hour period. Lengthy consideration was given to adding a 5 minute standard to address potential health problems for asthmatics. In the end, however, the EPA concluded that such health risks were likely too localized and uncertain to warrant national standards. The EPA did indicate, however, that it would later propose two new “guides to state action.” A “concern level” at 0.60 ppm, 5-minute average, and an “intervention level” at 2.0 ppm, 5-minute average.

In *American Lung Association v. EPA*, 134 F.3d 388 (D.C. Cir. 1998), the Court of Appeals for the District of Columbia Circuit remanded the SO_2 rules to the EPA, and required

the Administrator to provide a further explanation as to why she chose not to promulgate a standard to protect asthmatics. Among the questions which the court found had not been adequately addressed during the agency rulemaking were the following:

Why is the fact that thousands of asthmatics can be expected to suffer atypical physical effects from repeated five-minute bursts of high-level sulfur dioxide not a public health problem? Why are from 180,000 to 395,000 annual "exposure events" (the range indicated by the 1994 studies) or some fewer number (as suggested by the industry studies) so "infrequent" as to warrant no regulatory action? Why are disruptions of ongoing activities, use of medication, and hospitalization not "adverse health effects" for asthmatics?

Id. at 392. How likely is it that the EPA will be able to provide answers to these questions that will allow the agency to avoid promulgating special standards for asthmatics?

8. On July 18, 1997, the EPA published final rules revising both the ozone and particulate matter standards. 62 Fed. Reg. 38,652 (1997) (particulate matter); *id.* at 38,856 (ozone). The reason for the joint proposal was EPA's finding that exposure to ozone and particulate matter pose similar health effects, and that they share similarities in pollution sources, formation and control. 61 Fed. Reg. 65,716. The final rules for ozone retain the present 0.12 ppm, 1-hour standard but add a 0.08 ppm, 8-hour standard. As with the previous standards, the secondary standards are the same as the primary standards. EPA adopted the new standards in response to new evidence suggesting both acute and chronic health impacts that may result from exposure to the levels allowed by the current standards. But the substantial costs associated with achieving compliance with these standards assured that they would be controversial.

The final particulate matter rules add two new primary PM_{2.5} standards. One is set at 15 µg/m³, based on a three year average of annual arithmetic mean, and a 65 µg/m³ standard, "based on the three-year average of the 98th percentile of 24 hour PM_{2.5} concentrations. . . ." 62 Fed. Reg. 38,652. The rules are designed to address "a wide range of PM-related health effects . . ." 61 Fed. Reg. 65,638. The "2.5" in the PM_{2.5} designation refers to particles with diameters of 2.5 micrometers or less. The current PM₁₀ standards were retained, but will now be based on the 99th percentile of 24 hour PM₁₀ concentrations at each monitor within an area.

9. What does it mean to say that an area or region is violating an ambient air quality standard? The answer will depend upon the standard involved but the question is best understood by illustration. The primary NAAQS for sulfur dioxide has been set at 0.030 ppm annual arithmetic mean, and 0.14 ppm maximum 24-hour concentration, the latter standard not to be exceeded more than once per year. 40 CFR § 50.4 (1996). Air quality monitors sample air throughout all regions of the country. Using models and the information from these monitors, all violations of the NAAQS can theoretically be determined. A violation of the primary SO₂ standard exists whenever: (1) the annual arithmetic mean (computed by dividing the sum of all samples, and adjusted for the time period of the sample by the number of samples) exceeds 0.030 ppm, or (2) where more than one 24-hour air sample exceeds 0.14 ppm.

10. EPA's eventual listing of lead as a "criteria" pollutant did not end the controversy. The *Lead Industries* case which follows offers the reader a glimpse at the complexity behind government decisions under the Clean Air Act.

LEAD INDUSTRIES ASSOCIATION v. EPA647 F.2d 1130 (D.C. Cir. 1980), *cert. denied*, 449 U.S. 1042 (1980)

J. SKELLY WRIGHT, Chief Judge:

This is the third occasion on which this court has been asked to review Environmental Protection Agency (EPA or Agency) regulations promulgated under authority of the Clean Air Act, as amended, 42 U.S.C. § 7401 *et seq.* (Supp. I 1977) (the Act), and specifically designed to deal with the health problems associated with lead in the ambient air. In *Amoco Oil Co. v. EPA*, 501 F.2d 722 (D.C. Cir. 1974), we upheld regulations prohibiting the sale of leaded gasoline for use in automobiles equipped with “catalytic converter” devices for controlling exhaust emissions and requiring widespread retail marketing of at least one grade of unleaded gasoline. And in *Ethyl Corp. v. EPA*, 541 F.2d 1 (D.C. Cir. 1976) (*en banc*), *cert. denied*, 426 U.S. 941 (1976), we affirmed an EPA order requiring annual reductions in the lead content of leaded gasoline. In the present consolidated cases we are asked to review EPA regulations establishing national ambient air quality standards for lead. These air quality standards prescribe the maximum concentrations of lead that will be permitted in the air of our country. We must decide whether EPA’s Administrator acted within the scope of his statutory authority in promulgating these regulations and, if so, whether the evidence adduced at the rulemaking proceeding supports his final determinations. In addition, we must examine the petitioners’ claims that infirmities in the procedures employed by EPA in this rulemaking warrant remand of the regulations to the Agency. Petitioners are the Lead Industry Association, Inc. (LIA), a nonprofit trade association whose 78 members include most of the country’s producers and commercial consumers of lead (No. 78-2201), and St. Joe Minerals Corporation (St. Joe) (No. 78-2220).

I. BACKGROUND

Man’s ability to alter his environment to achieve perceived goals has undoubtedly made an enormous contribution to his economic and social well-being. This undertaking is not, however, without attendant costs. One of these costs is the toll that these alterations may exact on the environment itself and, in turn, the dangers that this may pose for the public health and welfare. Unfortunately, man’s ability to alter the environment often far outstrips his ability to foresee with any degree of certainty what untoward effects these changes may bring. The issues presented by these cases illustrate this sad fact.

Lead’s environmental significance is a consequence of both its abundance and its utility. The relative abundance of lead in the earth’s crust makes it unique among the toxic heavy metals. EPA’s “Air Quality Criteria For Lead”. And centuries of mining and smelting, and the use of lead in a variety of human activities, have increased the natural background concentration of lead in the environment. But it is only since the industrial age and the use of lead as a gasoline additive that lead has become pervasive. Today lead is ubiquitous. It is found in almost every medium with which we come into contact—food, water, air, soil, dust, and paint, each of which represents a potential pathway for human lead exposure through ingestion or inhalation. The widespread presence of this toxic metal in the environment poses a significant health risk. Lead is a poison which has no known beneficial function in the body, but when present in the body in sufficient concentrations lead attacks the blood, kidneys, and central nervous and other systems and can cause anemia, kidney damage, severe brain damage, and death.

There are three major sources of the body’s lead burden. In most people the largest

source is diet. * * * Another source, particularly in children, is the habit of placing hands, objects, and materials in the mouth. The third major source is the ambient air; airborne lead is deposited in the respiratory tract as a person breathes lead-contaminated air and is subsequently absorbed into the bloodstream. Once the lead is in the bloodstream its source is immaterial; total lead intake is the sum of the intake from all these sources. The multiplicity of sources of lead intake increases the difficulty of controlling human lead exposure. Much of the protective activity in this area has focused on limiting the amount of lead in the ambient air, the most controllable source of lead exposure. In this country, by far the largest source of lead emissions accounting for 88 percent of total lead emissions according to EPA estimates is the exhaust of motor vehicles powered by gasoline containing lead additives. Another eight percent of lead emissions is the result of solid waste incineration and combustion of waste oil. Industrial facilities account for the remaining four percent of total lead emissions.

Acting pursuant to authority conferred on it by Congress in the Clean Air Act, as amended, EPA has been involved in regulation of lead emissions almost since the Agency's inception. Its initial approach to controlling the amount of lead in the ambient air was to limit lead emissions from automobiles by restricting the amount of lead in gasoline. To this end it promulgated the regulations which we upheld in *Amoco Oil Corp. v. EPA, supra*, and *Ethyl Corp. v. EPA, supra*. However, in 1975 the Natural Resources Defense Council, Inc. (NRDC), and others brought suit against EPA claiming that the Agency was required by Section 108 of the Clean Air Act, to list lead as a pollutant for which an air quality criteria document would be prepared, and for which national ambient air quality standards should be promulgated under Section 109 of the Act. The District Court agreed with NRDC and directed the Administrator to list lead as a pollutant under Section 108 of the Act, by March 31, 1976. *Natural Resources Defense Council, Inc. v. Train*, 411 F. Supp. 864 (S.D.N.Y.1976). The Second Circuit affirmed, 545 F.2d 320 (2d Cir. 1976), and EPA initiated the proceedings outlined in the statute which are under review here.

II. THE STATUTORY SCHEME

The first step toward establishing national ambient air quality standards for a particular pollutant is its addition to a list, compiled by EPA's Administrator, of pollutants that cause or contribute to air pollution "which may reasonably be anticipated to endanger public health or welfare[.]" Section 108(a)(1). Within twelve months of the listing of a pollutant under Section 108(a) the Administrator must issue "air quality criteria" for the pollutant. Section 108 makes it clear that the term "air quality criteria" means something different from the conventional meaning of "criterion"; such "criteria" do not constitute "standards" or "guidelines," but rather refer to a document to be prepared by EPA which is to provide the scientific basis for promulgation of air quality standards for the pollutant. This criteria document must "accurately reflect the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects on public health or welfare which may be expected from the presence of such pollutant in the ambient air, in varying quantities."

At the same time as he issues air quality criteria for a pollutant, the Administrator must also publish proposed national primary and secondary air quality standards for the pollutant. Section 109(a)(2). National primary ambient air quality standards are standards "the attainment and maintenance of which in the judgment of the Administrator, based on such criteria and allowing an adequate margin of safety, are requisite to protect the public health." Section 109(b)(1). Secondary air quality standards "specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator, based on such

criteria, is requisite to protect the public welfare from any known or anticipated adverse effects associated with the presence of such air pollutant in the ambient air.” Section 109(b)(2). Effects on “the public welfare” include “effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being.” Section 302(h). The Administrator is required to submit the proposed air quality standards for public comment in a rulemaking proceeding, the procedure for which is prescribed by Section 307(d) of the Act.

Within six months of publication of the proposed standards the Administrator must promulgate final primary and secondary ambient air quality standards for the pollutant. Section 307(d)(10). Once EPA has promulgated national ambient air quality standards, responsibility under the Act shifts from the federal government to the states. Within nine months of promulgation of the standards each state must prepare and submit to EPA for approval a state implementation plan. Section 110(a)(1). These state implementation plans must contain emission limitations and all other measures necessary to attain the primary standards “as expeditiously as practicable,” but no later than three years after EPA approval of the plan, and to attain the secondary standards within a reasonable period of time. Section 110(a)(2)(A) & (B). The Administrator is authorized to extend the deadline for attainment of the primary air quality standards by two years, but thereafter it must be met. Section 110(e).

III. THE LEAD STANDARDS RULE MAKING PROCEEDINGS

As required by statute, EPA’s first step toward promulgating air quality standards for lead was to prepare a criteria document. The Lead Criteria Document was the culmination of a process of rigorous scientific and public review, and thus is a comprehensive and thoughtful analysis of the most current scientific information on the subject. The Lead Criteria Document went through three major drafts, and three separate reviews, including public meetings by the Subcommittee on Scientific Criteria for Environmental Lead of EPA’s Science Advisory Board (SAB Lead Subcommittee). The Agency reviewed over 280 public comments, most of a sophisticated scientific nature, before it issued the final Criteria Document. Members of the public, industry (including the petitioners in these cases), environmental groups, the scientific community, and state and federal government agencies actively participated in the review of the drafts. Notice of the meetings of the SAB Lead Subcommittee was published in the *Federal Register*, and the drafts of the Criteria Document which were to be reviewed were available before the meetings. A formal record and a transcript of the proceedings were kept, and a review of the transcript shows that scientists with differing views could and did exchange ideas with each other as well as agency staff, and that all were questioned by the members of the Subcommittee.

A. The Lead Criteria Document

EPA released its “Air Quality Criteria For Lead” on December 14, 1977. 42 Fed. Reg. 63,076. The document was “prepared to reflect the current state of knowledge about lead—specifically, those issues that are most relevant to establishing the objective scientific data base that will be used to recommend an air quality standard for lead that will adequately safeguard the public health.” Accordingly, the Criteria Document examined a large number of issues raised by the problem of lead in the environment. One of these was the effects of lead exposure on human health. The Criteria Document concluded that, among the major organ systems, the hematopoietic (blood-forming) and neurological systems are the areas of prime concern.

* * *

The Criteria Document also examined other more subtle effects on the blood-forming system, associated with lower levels of lead exposure. The most pertinent of these "subclinical" effects for purposes of these cases is lead-related elevation of erythrocyte protoporphyrin (EP elevation). According to the Criteria Document, this phenomenon must, for a number of reasons, be regarded as an indication of an impairment of human health.

* * *

B. The Proposed Standards

Simultaneously with the publication of the Lead Criteria Document on December 14, 1977, the Administrator proposed a national primary ambient air quality standard for lead of 1.5 mg Pb/m³ monthly average. 42 Fed. Reg. 63,076. He also proposed that the secondary air quality standard be set at the same level as the primary standard because the welfare effects associated with lead exposure did not warrant imposition of a stricter standard. 42 Fed. Reg. 63,081-63,082. In the preamble to the proposed standards the Administrator explained the analysis EPA had employed in setting the standards.

The Administrator first pointed out that a number of factors complicate the task of setting air quality standards which will protect the population from the adverse health effects of lead exposure. First, some sub-groups within the population have a greater potential for, or are more susceptible to the effects of, lead exposure. *Id.* at 63,077. Second, there are a variety of adverse health effects associated with various levels of lead exposure. *Id.* Third, the variability of individual responses to lead exposure, even within particular sub-groups of the population, would produce a range of blood lead levels at any given air lead level. *Id.* at 63,079. Fourth, airborne lead is only one of a number of sources of lead exposure and the relative contribution from each source is difficult to quantify. *Id.* at 63,080. Finally, the relationship between air lead exposure and blood lead levels is a complex one. *Id.* at 63,079.

In response to the first problem the Administrator began by noting that protection of the most sensitive groups within the population had to be a major consideration in determining the level at which the air quality standards should be set. And he determined that children between the ages of 1 and 5 years are most sensitive to the effects of lead exposure both because the hematologic and neurologic effects associated with lead exposure occur in children at lower threshold levels than in adults, and because the habit of placing hands and other objects in the mouth subjects them to a greater risk of exposure. *Id.* at 63,077-63,078. Next, the Administrator examined the various health effects of lead exposure and proposed that EP elevation should be considered the first adverse health effect of lead exposure because it indicates an impairment of cellular functions, and should be the pivotal health effect on which the lead standards are based. *Id.* at 63,078.

* * *

[T]o address the problem of variable responses to lead exposure, the Administrator selected 15 mg Pb/dl, the lowest reported threshold blood lead level for EP elevation in children, as the target mean population blood lead level. He reasoned that setting the target mean population blood lead level at the lowest reported threshold blood lead level for EP elevation would ensure that most of the target population would be kept below blood lead levels at which adverse health effects occur. *Id.* at 63,078.

* * *

Having selected a target mean population blood lead level, the Administrator's next step was to allow for the multiplicity of sources of lead exposure. He thus had to estimate the

amount of blood lead that should be attributed to non-air sources. The Administrator admitted that any amount he selected could be no more than a theoretical national average, and on the basis of the evidence available he proposed that the lead standards should be based on the general assumption that 12 mg Pb/dl of blood lead should be attributed to non-air sources. *Id.* at 63,080-63,081. Given the target mean population blood lead level of 15 mg Pb/dl and the assumed contribution from non-air sources of 12 mg Pb/dl, the maximum allowable contribution from ambient air is 3 mg Pb/dl. The final step in his analysis was to determine what air lead level would prevent the ambient air contribution to blood lead levels from exceeding 3 mg Pb/dl. This step required determining the relationship between air lead exposure and blood lead levels, *i.e.*, the air lead/blood lead ratio. On the basis of the information in the Criteria Document, the Administrator selected a ratio of 1:2 as appropriate for calculating the effect of air lead exposure on blood lead levels in children. *Id.* at 63,079.

Thereafter, calculation of the air quality standard was a mathematical exercise as shown in the following table:

1. Target mean blood lead level 15 µg Pb/dl
2. Assumed non-air contribution -12 µg Pb/dl
3. Allowable air contribution =3 µg Pb/dl
4. Permissible air lead concentration given assumed air lead/blood lead ratio

$$3 \text{ µg Pb/dl} \times \frac{1 \text{ µg Pb/m}^3 \text{ air}}{2 \text{ µg Pb/dl blood}} = 1.5 \text{ µg Pb/m}^3$$

The Administrator concluded, on the basis of available information, that the averaging period for the lead standard should be a calendar month. *Id.* at 63,081.

C. Public Comments

The public comment period ran from December 14, 1977 to March 17, 1978, and public hearings on the proposed standards were held on February 15 and 16, 1978. 43 Fed. Reg. 46,246. The comments on the proposed standards were sharply divided. The comments submitted by the lead industry and its experts uniformly opposed the proposed standards, and many endorsed a standard of 5 mg Pb/m³, the standard proposed in the discredited first draft of the Criteria Document, * * * as adequate to protect the public health. 43 Fed. Reg. 46248. On the other hand, environmental groups, medical experts, and state, local, and federal agencies either endorsed the proposed standards or called for even stricter standards. *Id.* None of the comments seriously questioned the selection of children between the ages of 1 and 5 years as the target population group, or the estimate of a contribution from non-air sources of 12 mg Pb/dl. The major areas of controversy were the Administrator's choice of EP elevation as the pivotal adverse health effect and his conclusion that the threshold blood lead level for EP elevation in children is 15 mg Pb/dl, the selection of an appropriate air lead/blood lead ratio, the appropriate allowance for an adequate margin of safety, and the averaging time period for the standards. *Id.*

* * *

D. The Final Air Quality Standards for Lead

The Administrator promulgated the final air quality standards on October 5, 1978, prescribing national primary and secondary ambient air quality standards for lead of 1.5 mg Pb/m³, averaged over a calendar quarter. 43 Fed. Reg. 46,246. Although the final standards were the same as the proposed standards (with the exception of the change in the averaging

period from 30 to 90 days), the Administrator arrived at the final standards through somewhat different analysis. The preamble to the final standards reveals that the comments on the proposed standards had led the Administrator to reconsider his analysis. In particular, he seemed to feel that legitimate questions had been raised concerning the health significance of the early stages of EP elevation and about the threshold blood lead level for this condition. 43 Fed. Reg. 46,248, 46,253. The Administrator's reexamination focused on two key questions: (1) What is the maximum safe individual blood lead level for children? and (2) what proportion of the target population should be kept below this blood lead level? *Id.* at 46,249, 46,252-46,253. Addressing the first issue required a review of the health effects of lead exposure discussed in the Criteria Document. The Administrator concluded that, although EP elevation beginning at blood lead levels of 15-20 mg Pb/dl is potentially adverse to the health of children, only when blood lead concentration reaches a level of 30 mg Pb/dl is this effect significant enough to be considered adverse to health. *Id.* at 46,253. Accordingly, he selected 30 mg Pb/dl as the maximum safe individual blood lead level for children. *Id.*

* * *

Having determined the maximum safe individual blood lead level for the target population, the Administrator next focused on the question of what percentage of children between the ages of 1 and 5 years the standard should attempt to keep below this blood lead level. According to the 1970 census, there are approximately 20 million children under the age of 5 years in the United States, 12 million of them in urban areas and 5 million in inner cities where lead exposure may be especially high. The Administrator concluded that in order to provide an adequate margin of safety, and to protect special high risk sub-groups, the standards should aim at keeping 99.5% of the target population below the maximum safe individual blood lead level of 30 mg Pb/dl. *Id.* at 46,253, 46,255. The next step in the analysis was to determine what target mean population blood lead level would ensure that 99.5% of the children below the age of 5 years would be kept below the maximum safe individual blood lead level of 30 mg Pb/dl. Using the log normal statistical technique he had alluded to in the proposed standards, he calculated that a target mean population blood lead level of 15 mg Pb/dl (the same number as in the proposed standards, but arrived at through different analysis), would accomplish this task. *Id.* at 46,253, 46,254. Thereafter, the Administrator used the same estimate of the contribution from non-air sources, 12 mg Pb/dl, and the same air lead/blood lead ratio, 1:2, that he had used in calculating the proposed standards, to compute the final ambient air quality standards for lead. The result was an ambient air quality standard of 1.5 mg Pb/m³, the same as the proposed standard. *Id.* at 46,254. The Administrator did, however, change the averaging period for the standards from one calendar month to one calendar quarter, *id.* at 46,255, because he felt that this change would significantly improve the validity of the data to be used in monitoring the progress toward attainment of the standards without rendering the standards less protective.

* * *

V. STATUTORY AUTHORITY

The petitioners' first claim is that the Administrator exceeded his authority under the statute by promulgating a primary air quality standard for lead which is more stringent than is necessary to protect the public health because it is designed to protect the public against "sub-clinical" effects which are not harmful to health. According to petitioners, Congress only authorized the Administrator to set primary air quality standards that are aimed at protecting the public against health effects which are known to be *clearly harmful*. They argue that Congress so limited the Administrator's authority because it was concerned that excessively

stringent air quality standards could cause massive economic dislocation.

In developing this argument St. Joe contends that EPA erred by refusing to consider the issues of economic and technological feasibility in setting the air quality standards for lead. St. Joe's claim that the Administrator should have considered these issues is based on the statutory provision directing him to allow an "adequate margin of safety" in setting primary air quality standards. In St. Joe's view, the Administrator must consider the economic impact of the proposed standard on industry and the technological feasibility of compliance by emission sources in determining the appropriate allowance for a margin of safety. St. Joe argues that the Administrator abused his discretion by refusing to consider these factors in determining the appropriate margins of safety for the lead standards, and maintains that the lead air quality standards will have a disastrous economic impact on industrial sources of lead emissions.

This argument is totally without merit. St. Joe is unable to point to anything in either the language of the Act or its legislative history that offers any support for its claim that Congress, by specifying that the Administrator is to allow an "adequate margin of safety" in setting primary air quality standards, thereby required the Administrator to consider economic or technological feasibility. To the contrary, the statute and its legislative history make clear that economic considerations play no part in the promulgation of ambient air quality standards under Section 109.

Where Congress intended the Administrator to be concerned about economic and technological feasibility, it expressly so provided. For example, Section 111 of the Act directs the Administrator to consider economic and technological feasibility in establishing standards of performance for new stationary sources of air pollution based on the best available control technology. See *Nat'l Asphalt Pavement Ass'n v. Train, supra*, 539 F.2d 775; S. REP. NO. 91-1196, 91st Cong., 2d Sess. 416 (1970). In contrast, Section 109(b) speaks only of protecting the public health and welfare. Nothing in its language suggests that the Administrator is to consider economic or technological feasibility in setting ambient air quality standards.

* * *

VI. HEALTH BASIS FOR THE LEADS STANDARDS

LIA does not question a number of the steps in the Administrator's analysis. It does not disagree with his selection of children between the ages of one and five years as the target population, or the decision to set a standard that would keep 99.5 percent of the children below the maximum safe individual blood lead level. In addition, LIA does not challenge the Administrator's suggestion that the standards should be based on an assumption that non-air sources contribute 12 mg Pb/dl to blood lead levels. LIA does, however, challenge other key elements in the Administrator's analysis.

A. Maximum Safe Individual Blood Lead Level

LIA attacks the Administrator's determination that 30 mg Pb/dl should be considered the maximum safe individual blood lead level for children, maintaining that there is no evidence in the record indicating that children suffer any health effects that can be considered adverse at this blood lead level. As previously noted, the Administrator's selection was based on his finding that EP elevation at 30 mg Pb/dl is the first adverse health effect of lead exposure, and his determination that a maximum safe individual blood lead level of 30 mg Pb/dl will allow an adequate margin of safety in protecting children against the more serious effects of lead exposure-anemia, symptoms of which appear at blood lead levels of 40 mg Pb/dl and central nervous system deficits which begin to occur at blood lead levels of 50 mg Pb/dl.

LIA challenges each of these findings. First, it contends that nothing in the record supports the suggestion that EP elevation at 30 mg Pb/dl is harmful to health, arguing that EP elevation is a mere “subclinical effect”—a biological response to lead exposure—which is without health significance, and noting that a number of its experts brought this matter to EPA’s attention in their comments on the proposed standards. In LIA’s view, the Administrator did not explain precisely how impairment of heme synthesis at blood lead levels of 30 mg Pb/dl adversely affects the health of children. Second, LIA challenges the Administrator’s determination that a maximum safe individual blood lead level of 30 mg Pb/dl is justified by the need to allow an adequate margin of safety in protecting children against anemia and central nervous system deficits. It maintains that the evidence in the record does not support the Administrator’s conclusion that the blood lead threshold for the symptoms of anemia in children is 40 mg Pb/dl. LIA claims that this error was brought to the Administrator’s attention by comments on the proposed standard, but that he failed to respond to these comments, thereby violating the statutory provision requiring him to respond to “significant comments, criticisms, and new data submitted . . . during the comment period.” Third, LIA contends that the preamble to the final regulations does not state the basis for the Administrator’s finding that central nervous system deficits occur in children at blood lead levels of 50 mg Pb/dl, thereby precluding this court from being able to test the soundness of this determination. Finally, LIA argues that even if it were to concede that EPA’s conclusions about the blood lead thresholds for anemia and central nervous system deficits are correct, there is still no explanation of why the Administrator concluded that a maximum individual safe blood level of 30 mg Pb/dl—rather than 35 mg Pb/dl, for example—is necessary to provide an adequate margin of safety against these effects.

Our review of the record persuades us that there is adequate support for each of the Administrator’s conclusions about the health effects of lead exposure and, consequently, that LIA’s challenges to the evidentiary support for these findings must be rejected. Under the statutory scheme enacted by Congress, the Criteria Document prepared with respect to each pollutant is to provide the scientific basis for promulgation of air quality standards for the pollutant. We have already noted that the Lead Criteria Document was the product of a process that allowed the rigorous scientific and public review that are essential to the preparation of a document “accurately reflect[ing] the latest scientific knowledge useful in indicating the kind and extent of all identifiable effects [of lead exposure] on [the] public health” In our view, the Criteria Document provides ample support for the Administrator’s findings.

The Criteria Document concluded that EP elevation, which begins in children at blood levels of 15-20 mg Pb/dl, is one of the more significant effects of low level lead exposure because it indicates that lead has already begun to affect basic biological functions in the body.

* * *

Relying on the Criteria Document’s discussion, as well as other evidence in the record, the Administrator made a judgment that for purposes of setting air quality standards for lead, EP elevation at 30 mg Pb/dl must be considered the first adverse effect on the health of children, and he determined that the maximum safe individual blood lead level should be no higher than 30 mg Pb/dl.

The Administrator’s judgment echoes the consensus of a group of clinicians who, in 1975, participated in preparation of a statement issued by the Center For Disease Control and endorsed by the American Academy of Pediatrics. These experts agreed that EP elevation “should be used as an indicator of a significant and worrisome body burden of lead.” Moreover, the Center For Disease Control uses EP elevation at 30 mg Pb/dl as the cutoff point

for detection of lead poisoning in children in its screening programs, a factor that influenced the Administrator's decision. 43 Fed. Reg. 46,253.

We also reject LIA's claim that the evidence in the record does not support the Administrator's determination that the blood lead threshold for symptoms of anemia in children is 40 µg Pb/dl. According to the Criteria Document, the onset of anemia is marked by a decline in the level of hemoglobin per unit of blood. And the Criteria Document states that "[r]eports on children indicate that statistically significant decreases in hemoglobin levels begin to appear at the blood lead level of 40 µg [Pb/dl] or somewhat below." * * *

Finally, our examination of the record also reveals ample support for the Administrator's determination that lead-induced central nervous system deficits begin to occur in children at blood lead levels of 50 µg Pb/dl. * * * The Criteria Document reported that the blood levels associated with these neurobehavioral deficits [irreversible neurological and behavioral impairment] are 50-60 µg Pb/dl. These conclusions were endorsed by several of the experts who participated in the lead standards rulemaking proceedings, including one of LIA's experts. * * * Accordingly, we reject LIA's challenge to the Administrator's conclusion that central nervous system deficits begin to occur in children at blood lead levels of 50 µg Pb/dl.

* * *

To be sure, the Administrator's conclusions were not unchallenged; both LIA and the Administrator are able to point to an impressive array of experts supporting each of their respective positions. However, disagreement among the experts is inevitable when the issues involved are at the "very frontiers of scientific knowledge," and such disagreement does not preclude us from finding that the Administrator's decisions are adequately supported by the evidence in the record.

* * *

B. Margin of Safety

Both LIA and St. Joe argue that the Administrator erred by including multiple allowances for margins of safety in his calculation of the lead standards. Petitioners note that the statute directs the Administrator to allow an "adequate margin of safety" in setting primary air quality standards, and they maintain that as a matter of statutory construction the Administrator may not interpret "margin" of safety to mean "margins" of safety. In petitioners' view, the Administrator in fact did just this insofar as he made allowances for margins of safety at several points in his analysis. They argue that margin of safety allowances were reflected in the choice of the maximum safe individual blood lead level for children, in the decision to place 99.5 percent of the target population group below that blood lead level, in the selection of an air lead/blood lead ratio at 1:2, and in the Administrator's estimate of the contribution to blood lead levels that should be attributed to non-air sources. The net result of these multiple allowances for margins of safety, petitioners contend, was a standard far more stringent than is necessary to protect the public health. St. Joe suggests that EPA should have adopted an approach which required decisions on:

- 1) The maximum level of lead in air which is protective of health; *i.e.*, a threshold beyond which the public health is not protected; and
- 2) An adequate margin of safety by which the level which is protective of health must be reduced.

EPA responds by maintaining that allowances for a margin of safety were made only at two points in its analysis: in the selection of a maximum safe individual blood lead level of 30 mg Pb/dl and in the decision to set a standard designed to keep 99.5 percent of the target

population below that blood lead level. It argues that the statutory requirement of a margin of safety does not mandate adoption of the method suggested by St. Joe. Rather, EPA suggests, it indicates the precautionary orientation the Administrator is to bring to bear on the task of setting air quality standards. How conservative he must be in making particular judgments must, the Agency maintains, depend on such factors as the amount of uncertainty involved, the size of the population affected, and the severity of the effect. EPA argues that petitioners' claims about multiple allowances for margins of safety indicate that they have failed to recognize the difference between providing for a margin of safety and making a scientific judgment in the face of conflicting evidence.

We agree with the Administrator that nothing in the statutory scheme or the legislative history requires him to adopt the margin of safety approach suggested by St. Joe.

* * *

We also agree with the Administrator's suggestion that petitioners have ignored the distinction between scientific judgments based on the available evidence and allowances for margins of safety. In every instance in which the Administrator's judgment on a particular issue differed from petitioners' they attributed his decision to an allowance for a margin of safety. To be sure, there is no bright line that divides these two types of decisions, but they are nonetheless conceptually distinct.

* * *

IX. THE SECONDARY AIR QUALITY STANDARD

The final challenge to the Administrator's actions that we must consider is LIA's objection to his decision to promulgate a national secondary ambient air quality standard for lead of 1.5 mg Pb/m³, the same level as the primary standard. The Administrator explained that this decision was based on his conclusion that the evidence on the "welfare effects" of lead exposure did not justify promulgation of a secondary standard more stringent than the primary standard. LIA argues that the Administrator had no authority to adopt the secondary standard without making supporting findings showing that the standard is necessary to protect the public welfare. It contends that this court's decision in *Kennecott Copper Corp. v. EPA*, 462 F.2d 846 (D.C. Cir. 1972), mandates remand of the secondary standard. In that case we remanded the national secondary air quality standard for sulfur dioxide because the Administrator had failed to "enlighten the court as to the basis on which he reached the . . . standard from the material in the Criteria [Document]." *Id.* at 850. LIA argues that the Administrator should have considered whether the welfare effects of lead exposure would permit him to set a secondary air quality standard higher than the primary standard. Pointing out that the primary standards are supposed to protect public health and that they are based on a 90-day averaging period, LIA argues that it follows that primary standards need be met only in inhabited areas, whereas the secondary standards must also be met in uninhabited areas.

* * *

LIA's complaint is based on a misconception about the reach of the primary standard. As EPA notes, the primary standard must be met in all parts of the country, whether inhabited or uninhabited. Thus by setting the secondary standard at the same level as the primary standard, the Administrator imposed no additional burdens on the industry, and he properly concentrated his attention on whether the welfare effects of lead exposure justified promulgation of a more stringent secondary standard.

* * *

XI. CONCLUSION

The national ambient air quality standards for lead were the culmination of a process of rigorous scientific and public review which permitted a thorough ventilation of the complex scientific and technical issues presented by this rulemaking proceeding. Interested parties were allowed a number of opportunities to participate in exploration and resolution of the issues raised by the standard-setting exercise. EPA, and ultimately the public whose health these air quality standards protect, have benefitted from their contribution. To be sure, even the experts did not always agree about the answers to the questions that were raised. Indeed, they did not always agree on what the relevant questions were. These disagreements underscore the novelty and complexity of the issues that had to be resolved, and both the EPA and the participants in the rulemaking proceeding deserve to be commended for the diligence with which they approached the task of coming to grips with these difficult issues.

We have accorded these cases the most careful consideration, combining as we must careful scrutiny of the evidence in the record with deference to the Administrator's judgments. We conclude that in this rulemaking proceeding the Administrator complied with the substantive and procedural requirements of the Act, and that his decisions are both adequately explained and amply supported by evidence in the record. Accordingly, we reject petitioners' claims of error. The regulations under review herein are

Affirmed.

NOTES

1. Note the problems that the EPA had to address in promulgating ambient lead standards. First, some subgroups (most notably children) are more susceptible to lead poisoning than others. Second, lead poisoning causes a variety of different adverse health effects. Third, individuals respond differently to lead exposure. Fourth, the human body receives lead from ingestion as well as from airborne sources. Finally, the amount of lead in the ambient air does not correspond directly to blood-lead levels. How were each of these problems addressed in the proposed and final rules? To what extent does the scientific uncertainty surrounding each of these problems help or hinder the Lead Industry Association seeking to have the lead rules overturned?

2. One of the many difficulties facing the Administrator in establishing a NAAQS for lead was the fact that airborne lead is only one of several sources of blood lead levels in humans. The Criteria Document for lead showed that high background levels of lead are common, particularly in industrial areas. 42 Fed. Reg. 63,080 (1977). Nonetheless, in setting the NAAQS for lead, the Administrator used a national average of 12 mg Pb/dl (micrograms of lead/deciliter) as the background blood lead level from non-air sources. What problems do you see with using a *national average* of background contamination to calculate a NAAQS? Should the Administrator have considered regional or urban/rural standards based on differing levels of background contamination? Are such levels authorized by law? *See American Petroleum Institute v. Costle*, 665 F.2d 1176 (D.C. Cir. 1981), *cert. denied, sub nom. City of Houston v. Gorsuch*, 455 U.S. 1034 (1982) ("[T]he agency need not tailor national regulations [setting ambient air quality standards for ozone] to fit each region or locale").

3. In a portion of the opinion omitted from the excerpt which appears in the text, the

court flatly rejected plaintiffs' claim that the economic and technological feasibility of meeting the standards must be considered in establishing the NAAQS for lead. 647 F.2d at 1148-1151. Compare *Union Electric Co. v. EPA*, 427 U.S. 246 (1976) *infra* at Chapter 6.

4. Section 109(b)(1) of the Act provides that national *primary* ambient air quality standards must be established at levels requisite to protect the public health, "allowing an adequate margin of safety." Plaintiffs argued that EPA had violated this provision by including in its lead standards "multiple allowances for margins of safety". Were plaintiffs correct in arguing that multiple allowances for margins of safety were used by EPA? Assuming plaintiffs were correct, have they established a violation of the law?

5. Section 109(b)(2) of the Act provides for the adoption of national *secondary* ambient air quality standards at a level sufficient to protect the public welfare. This is defined to encompass "effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being." § 302(b). "Secondary" air standards are generally more stringent than primary standards, *see Kennecott Copper Corp. v. EPA*, 462 F.2d 846, 847 (D.C. Cir. 1972), though as the *Lead Industries* case demonstrates, they can be the same as the primary standards. Why does the court reject LIA's argument that secondary standards for lead should be less stringent than the primary standards?

6. What confidence do you have in the ability of our judicial system to grapple successfully with complex technical issues of the utmost importance to public health and safety, such as those raised in *Lead Industries*? In this regard see the concurring opinion of Judge Bazelon in *International Harvester EPA's tailpipe emission standards for motor vehicles: International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 650-52 (D.C. Cir. 1973) which concerned the propriety of EPA's exhaust emission for motor vehicles:

Socrates said that wisdom is the recognition of how much one does not know. I may be wise if that is wisdom, because I recognize that I do not know enough about dynamometer extrapolations, deterioration factor adjustments, and the like to decide whether or not the government's approach to these matters was statistically valid. Therein lies my disagreement with the majority.

The court's opinion today centers on a substantive evaluation of the Administrator's assumptions and methodology. I do not have the technical know-how to agree or disagree with that evaluation—at least on the basis of the present record. My grounds for remanding the case rest upon the Administrator's failure to employ a reasonable decision-making process for so critical and complex a matter. At this time I cannot say to what extent I could undertake an evaluation of the Administrator's findings if they were based on an adequate decisional process.

I cannot believe that Congress intended this court to delve into the substance of the mechanical, statistical, and technological disputes in this case. Senator Cooper, the author of the judicial review provision, stated repeatedly that this court's role would be to "determine the question of due process." Thus the court's proper role is to see to it that the agency provides "a framework for principled decision-making." Such a framework necessarily includes the right of interested parties to confront the agency's decision and the requirement that the agency set forth with clarity the grounds for its rejection of opposing views.

The majority's interpretation of the present statute and the administrative

precedents would give us no right to establish these procedural guidelines. Their opinion maintains that the strict deadlines in the Clean Air Act preclude any right to challenge the Administrator until after the decision had been made. It indicates that, since this hearing was “rule-making” rather than “adjudicatory,” cross-examination and confrontation are not required under traditional rules of administrative law.

I understand this viewpoint, but I do not share it. I do not think the authors of the Clean Air Act intended to put such strict limits on our review of the Administrator’s decision-making process. Further, the interests at stake in this case are too important to be resolved on the basis of traditional administrative labels. We recognized two years ago that environmental litigation represents a “new era” in administrative law. We are dealing here not with an airline’s fares or a broadcaster’s wattage, but with all humanity’s interest in life, health, and a harmonious relationship with the elements of nature.

This “new era” does not mean that courts will dig deeper into the technical intricacies of an agency’s decision. It means instead that courts will go further in requiring the agency to establish a decision-making process adequate to protect the interests of all “consumers” of the natural environment. In some situations, traditional rules of “fairness”—designed only to guard the interests of the specific parties to an agency proceeding—will be inadequate to protect these broader interests. This is such a case. Whether or not traditional administrative rules require it, the critical character of this decision requires at the least a carefully limited right of cross-examination at the hearing and an opportunity to challenge the assumptions and methodology underlying the decision.

* * *

My brethren and I are reaching for the same end—a “reasoned decision”—through different means. They would have us examine the substance of the decision before us. There are some areas of administrative law—involving issues of liberty and individual rights—where judges are on a firm ground in undertaking a substantive review of agency action. But in cases of great technological complexity, the best way for courts to guard against unreasonable or erroneous administrative decisions is not for the judges themselves to scrutinize the technical merits of each decision. Rather, it is to establish a decision-making process which assures a reasoned decision that can be held up to the scrutiny of the scientific community and the public. “[T]he best test of truth is the power of the thought to get itself accepted in the competition of the market.” If we were to require procedures in this case that open the Administrator’s decision to challenge and force him to respond, we could rely on an informed “market” rather than on our own groping in the dark to test the validity of that decision.

* * *

7. Do you agree with Judge Bazelon that the courts should emphasize procedure rather than substance in their review of complex agency rules? In this regard, see *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978) wherein the Supreme Court held that courts may require no more procedure for rulemaking proceedings than are expressly prescribed by law.

8. Should a special “science court” be impaneled to hear cases of a highly technical nature? See Arthur Kantrowitz, *Controlling Technology Democratically*, 63 AM. SCIENTIST 505 (1975). See also Joel Yellin, *Science, Technology, and Administrative Government: Institutional Designs for Environmental Decisionmaking*, 92 YALE L.J. 1300 (1983); Stephen L. Carter, *Separatism and Skepticism*, 92 YALE L.J. 1334 (1983). New South Wales in Australia has successfully employed this approach with the establishment of a Land and Environment Court. See, Mark Squillace, *An American Perspective on Environmental-Impact Assessment in Australia*, 20 COLUM. J. ENVTL. L. 43, 115 (1995); Kenneth M. Murchison, *Environmental Law in Australia and the United States: A Comparative Overview* 22 B.C. ENVTL. AFF. L. REV. 503, 553 (1995).

9. Under the Clean Air Act, states are given the primary responsibility for achieving the NAAQS promulgated by the Administrator. Consequently, each state is required to submit a plan for implementing the NAAQS for particular pollutants. Prior to the 1990 Amendments, states were given nine months after EPA established a new or revised NAAQS for a particular pollutant, to submit their state implementation plan (SIP) revisions. EPA would either approve or reject these plans within four months. *Natural Resources Defense Council v. Thomas*, 705 F. Supp. 1 (D.D.C. 1988), decided before the 1990 Amendments, highlights the difficulties that states had in achieving the NAAQS, and the need for a different approach to air pollution control. The NAAQS for lead was adopted in 1978. By 1982, however, EPA had failed to approve state plans or create federal implementation plans (FIP) for lead as required by the law. NRDC sued and the court ordered the EPA to either approve or reject SIPs for lead by certain dates. *Id.* at 2. By 1986, EPA had met several of these deadlines but had failed to make decisions for four major industrial states. NRDC then brought a second action to enforce the court’s earlier order. The district court agreed with NRDC that the EPA had failed to meet the deadlines set out in the earlier court order. Nonetheless, the court refused to impose new 90 day as suggested by NRDC, and instead gave the EPA until 1989 to approve or reject the SIPs in question. *Id.* at 3-4.

10. Instead of the nine months allowed by the earlier law, the 1990 Amendments give the states three years (or such shorter time as EPA may prescribe) to submit a revised SIP after a NAAQS is changed. See § 110(a)(1). (EPA may extend the period for submission of a plan to achieve secondary standards for no more than 18 months. § 110(b)). On the surface it may seem that Congress has weakened a key component of the Clean Air Act. In fact, however, the 1990 Amendments may simply recognize a welcome shift away from reliance on ambient air quality standards for cleaning our air, and towards more stringent point source controls. Airborne lead is largely the result of automobile combustion from cars using leaded gasoline. The 1990 Amendments ban the sale of leaded gasoline after 1995. The Acid Deposition Program in Title IV of the 1990 Amendments will substantially reduce the amount of SO₂ in the atmosphere. See § 401(b). Further, more stringent tailpipe emission standards and cleaner fuel requirements should help to address ozone, NO_x, and CO pollution. See § 202(1)(2). To be sure, SIP requirements remain substantial. Indeed, as will be discussed in the following chapter, they have become much more onerous for states with ozone, carbon monoxide and particulate nonattainment areas. But no longer does the law rely so heavily on the SIP program to achieve its goal of clean air.

11. *Public Notification of Health Hazards.* Section 127 of the Act requires that the state implementation plans incorporate measures “which will be effective to notify the public” of instances during which the NAAQS are violated, and of the health hazards associated

therewith. What form should this notice take?

12. Excessive carbon dioxide (CO₂) emissions are the most significant contributor to the global warming problem. See M.L. Livingston et al., *The Determinants of International Pollution: Empirical Evidence From CO₂*, 28 TULSA L.J. 723 (1993), which attributes approximately one-half of the global warming force currently occurring to CO₂. *Id.* at 124. Carbon dioxide, of course, occurs naturally in the environment; but its existence in quantities well above natural levels now threatens the ecological balance. Much of the excess CO₂ is created by fossil fuel combustion which is ubiquitous in our society. Should EPA regulate CO₂ as a criteria pollutant? What arguments for and against such regulation can be made?

13. EPA first promulgated NAAQS for sulfur dioxides in 1971. In 1984, EPA issued a revised criteria document for sulfur dioxide but did not revise the sulfur dioxide standards. Should EPA be required to revise the NAAQS following revision of the criteria document? Read § 109(a)(2) of the Act and then review the decision in *Environmental Defense Fund v. EPA*, 27 Env'tl. Rep. Cases 2008 (S.D.N.Y. 1988).

6 STATE IMPLEMENTATION PLANS

Before the 1990 Amendments, the state implementation plan, or “SIP”, was the principal mechanism under the Act for achieving and maintaining the national ambient air quality standards. Although SIPs remain important, and will become much more complex as a result of the 1990 Amendments, the onus placed on the SIP for achieving ambient air standards has been diminished largely as a result of a plethora of new standards imposed on motor vehicles and fuels and on new and existing stationary sources of air pollution.

As with most other environmental regulatory statutes enacted by Congress, the Clean Air Act employs a “cooperative federalism” scheme of regulation. States are given the first chance to adopt a SIP that comports with the federal law (§ 110(a)(2)) and EPA’s detailed regulations. 40 C.F.R. Part 51 (1996). Among other things, § 110(a)(2) requires that each SIP:

(A) include enforceable emission limitations and other control measures, means, or techniques * * * as may be necessary or appropriate to meet the applicable requirements of this Act;

(B) provide for establishment and operation of appropriate devices, methods, systems, and procedures necessary to—

- (i) monitor, compile, and analyze data on ambient air quality, and
- (ii) upon request, make such data available to the Administrator;

(C) include a program to provide for the enforcement of the measures described in subparagraph (A) * * * including a permit program as required in parts C and D [§§ 165 and 173 of the Act];

(D) contain adequate provisions—

(i) prohibiting * * * any source or other type of emissions activity within the State from emitting any air pollutant in amounts which will—

(I) contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or

(II) interfere with [another State’s PSD program] * * * [and]

(ii) insuring compliance with the applicable requirements of sections 126 and 115 (relating to interstate and international pollution abatement);

(E) provide (i) necessary assurances that the State * * * will have adequate personnel, funding, and authority * * * law to carry out such implementation plan * * *,

* * *

(F) require, as may be prescribed by the Administrator—

(i) the installation, maintenance, and replacement of equipment, and the implementation of other necessary steps, by owners or operators of stationary sources

- to monitor emissions from such sources,
 - (ii) periodic reports on the nature and amounts of emissions and emissions-related data from such sources, and
 - (iii) correlation of such reports by the State agency with any emission limitations or standards established pursuant to this Act, which reports shall be available at reasonable times for public inspection;
- (G) provide for authority comparable to that in section 303 [relating to emergency powers] and adequate contingency plans to implement such authority;
- (H) provide for revision of such plan—
- (i) * * * as may be necessary to take account of revisions of such national primary or secondary ambient air quality standard * * * and
 - (ii) whenever the Administrator finds * * * that the plan is substantially inadequate to attain the national ambient air quality standard which it implements * * *;
- (I) in the case of a plan or plan revision for an area designated as a nonattainment area, meet the applicable requirements of part D (relating to nonattainment areas);
- (J) meet the applicable requirements of section 121 (relating to consultation), section 127 (relating to public notification), and part C (relating to prevention of significant deterioration of air quality and visibility protection);
- (K) provide for—
- (i) the performance of such air quality modeling as the Administrator may prescribe for the purpose of predicting the effect on ambient air quality of any emission of any air pollutant for which the Administrator has established a national ambient air quality standard, and
 - (ii) the submission, upon request, of data related to such air quality modeling to the Administrator;
- (L) require the owner or operator of each major stationary source to pay to the permitting authority, as a condition of any permit required under this Act, a fee sufficient to cover—
- (i) the reasonable costs of reviewing and acting upon any application for such a permit, and
 - (ii) if the owner or operator receives a permit for such source, the reasonable costs of implementing and enforcing the terms and conditions of any such permit * * * until such fee requirement is superseded with respect to such sources by the Administrator's approval of a fee program under title V; and
- (M) provide for consultation and participation by local political subdivisions affected by the plan.

If a state fails to submit a plan to EPA, or if EPA determines that the plan submitted by the state is inadequate, then EPA must develop a federal implementation plan for that state. § 110(c). Once a state receives EPA approval for its plan the state becomes the primary regulatory authority responsible for administering and enforcing the plan. EPA, however, retains an oversight role with independent enforcement powers.

The state implementation plan process has spawned much litigation, a sampling of which is set forth for the reader in the pages that follow.

A. Approval and Disapproval of State Implementation Plans

STATE OF TEXAS v. EPA 499 F.2d 289 (5th Cir. 1974)

BELL, Circuit Judge:

This case requires that we resolve a major dispute between the Environmental Protection Agency and the State of Texas, several of that state's political subdivisions, and numerous of its corporate citizens. The difficulties arose after the EPA determined that Texas' own air quality implementation plan for control of photochemical oxidant pollution would not assure the attainment of federal ambient air quality standards by May 31, 1975, as required by Section 110 of the Clean Air Act Amendments of 1970. Pursuant to its statutory authority and duty, the EPA disapproved the Texas plan and issued proposed regulations which would, in its opinion, insure attainment of the air quality standard. These regulations adopted the measures contained in Texas' plan, but also imposed additional controls. After holding public hearings, the EPA promulgated final regulations which in some respects reflected concerns and priorities revealed at the hearings, but which nonetheless imposed on five of the six involved air quality control regions (AQCR's) requirements more severe than those in the Texas Plan. *See* 38 Fed. Reg. 30633-51 (Nov. 6, 1973).

* * *

The principal questions presented are whether it was proper for the EPA first to determine that the state's plan was inadequate, and then to promulgate its own plan incorporating more onerous regulations. While a negative answer to the first question would settle the second question, an affirmative answer to the first issue is not similarly dispositive. It is possible that the EPA could properly determine that Texas' plan would not insure attainment of quality standards, but would be arbitrary, capricious, or beyond its authority, in its determination of the nature and quantity of additional control measures. We hold that the EPA determined in a legal and enforceable manner that the state's plan was inadequate.

* * *

I. THE DISPUTE IN OUTLINE

Determining the measures required to meet air quality standards for photochemical oxidants involves a multi-step analytical process. Initially, of course, it is necessary to set the standards. These however may not be challenged in this proceeding, and petitioners do not openly do so. The second step, since the control strategy for oxidant pollution relies on control of hydrocarbon emissions, is to determine the relationship between the quantity of those emissions and the resultant maximum level of oxidants. This relationship can be expressed as a "reduction model" which shows, for each current maximum level of oxidant pollution, the percentage reduction in hydrocarbon emissions that is necessary to achieve the oxidant air quality standard.

* * *

[P]etitioners and the EPA differ as to the model which determines how great a reduction

in hydrocarbon emissions is necessary, and also as to how effective in achieving the required reductions particular measures will be. In general, the state's calculations indicate that the ambient air quality standards can be attained in each AQCR through its Regulation V, imposing extensive controls on stationary sources, such as factories and refineries. The EPA's position is that the state not only underestimates the reductions required to meet air quality standards, but also overestimates the reductions to be obtained by its plan. Thus the EPA found it necessary in five of the six regions to impose varying degrees of control on transportation-related emissions, and in one of those regions also to prohibit the construction of additional stationary pollution sources.

Finally, petitioners attack various of the EPA's required control measures on grounds more specific than their general claim that the state's calculations are correct and its plan adequate.

* * *

II. HOW GREAT MUST THE REDUCTIONS BE?

Petitioners first challenge to the EPA's analysis concerns its reduction model. As has been stated, this model determines, for each pre-control level of oxidant pollution, how great must be the reduction in hydrocarbon emissions to attain the ambient air quality standard for oxidants. The implementation plan submitted by the state was based on a reduction model requiring, for a significant range of oxidant pollution, considerably lower emission reductions than does the model used by the agency.

* * *

As a general matter, the EPA has required that states use the reduction model contained in Appendix J to 40 C.F.R. § 51.14 (1973). However, in submitting its plan Texas utilized a different model on the grounds that it was employing more sophisticated methodology, based not on total hydrocarbons emitted into the atmosphere, but rather upon hydrocarbon emissions which react with nitrogen oxides to form oxidant pollutants. Since it is only reactive hydrocarbons which contribute to oxidant pollution, the Texas approach is theoretically attractive. However, reactive hydrocarbons have not yet been the subject of extensive pollution control study, and the resulting lack of knowledge restricts the usefulness of reactive hydrocarbon pollution control plans. One important unknown is the configuration of the appropriate reduction model.

The EPA concluded that Texas' reduction curve was not supported by technical data, and was based on impermissible assumptions. However, rather than require that Appendix J be applied to the reactive hydrocarbon approach, it determined that the most reasonable model to use in these circumstances would be the "straight rollback" model.

This model is essentially a method of coping with inadequate information by assuming that reductions in oxidant pollutants will be proportional to reductions in reactive hydrocarbon emissions. The agency does not contend that the model is an accurate representation of reality, but it does contend that there is no information to support divergences from it, either in the direction of higher reduction requirements, as with Appendix J and part of the Texas curve, or in the direction of lower reduction requirements, as in the case of most of the Texas curve. Basically the EPA's position is that in the absence of contrary indications, and given the statutory necessity of accepting some model, the simplistic proportional rollback model is a reasonable resolution.

We will first consider the agency decision to reject the model on which Texas based its plan. We will then consider the agency's use of the straight rollback model.

A.

In rejecting Texas' reduction model the agency pointed out defects which have not adequately been answered on this appeal. Initially, for all practical purposes the state supplied no theoretical or empirical support for its novel model. Upon further inquiry, the EPA learned that the state had modified Appendix J by grasping upon the fact that no reliable data exists connecting hydrocarbon emissions and relatively low maximum levels of oxidant pollution (below .13 ppm but above the national standard of .08 ppm). Faced with this same information gap, the EPA had determined, by a method which is not disclosed in the record, that a maximum oxidant level of .08 would be associated with a nonmethane hydrocarbon concentration of .17 ppm. By contrast, the Texas model assumed the appropriate figure to be in the neighborhood of .20 or .21—the level of hydrocarbons which Appendix J associates with an oxidant pollution level of slightly below .10 ppm. The effect of this assumption, for the four regions below .15 oxidant concentration, was to significantly lower the necessary reduction in hydrocarbon emissions.

* * *

We can summarize the situation confronting the agency when it chose to reject Texas' reduction model. The model was novel, yet unsupported by data, theory, or even meaningful explanations. It purported to be appropriate for nonreactive hydrocarbons, yet was explicitly based on data for nonmethane hydrocarbons. Finally, it was significantly different from the model the EPA derived from the same data, and even if the EPA model was not known to be accurate, it was part of a promulgated regulation which had been subjected to prior public scrutiny and comment. In these circumstances we cannot conclude that the agency's rejection of Texas' model was arbitrary or capricious.

B.

We must now consider the EPA's use of a straight rollback model, which model it acknowledges to be based upon a simplistic assumption rather than experimental data or proven theory. While we are uneasy that such an unreliable construct should be the basis of wide-ranging government action, we do not consider the use of the straight rollback model to be arbitrary and capricious.

The statute requires implementation plans which will insure attainment of the national air quality standards. To design such plans it is necessary to utilize some model relating reductions in antecedent emissions to resulting reductions in pollutant concentrations. In the absence of sophisticated information, the EPA has been forced to rely on crude assumptions. We cannot object, for it is not our role to judge whether the EPA's projections are accurate, but only whether they represent arbitrary or capricious exercises of its authority. Necessity, which has mothered the EPA's invention of this model, also protects it from a judicial insistence on greater reliability.

Further, we think it significant that the straight rollback model is, in an important sense, neutral, in that it establishes as a starting point the commonsensical proposition that pollutants will be reduced proportionally to reductions in their chemical precursors.

* * *

III. REDUCTIONS TO BE OBTAINED

The second broad source of controversy between the state and EPA concerns the reduction in hydrocarbon emissions expected from the state's control of stationary sources.

* * *

As with the case of the appropriate reduction model, this controversy has its roots in Texas' reactive hydrocarbon approach. The problem arises in determining the reactive component of total hydrocarbon emissions from each emission category. In general, the agency has determined that reactive hydrocarbons constitute a smaller percentage of total stationary source emissions than has the state, and thus that stationary sources are responsible for a smaller percentage of overall reactive emissions. For example, in Region 7 the EPA calculates that 294,000 tons per year of *reactive* hydrocarbons are emitted from stationary sources, and 106,000 tons per year from mobile sources. This compares with the state's calculations of 481,000 and 99,000, respectively. Translated into percentages, the EPA attributes 73 per cent of total reactive emissions to stationary sources, while the state attributes 83 per cent. The result of the EPA's calculations is that the state's highly effective Regulation V, unaided by transportation-related controls, does not affect a sufficiently large proportion of the total to achieve the 75 per cent overall reduction.

As we did in the case of the reduction model controversy, we will approach the question in two stages. We will first consider the agency's rejection of Texas' calculations, and then consider petitioners' challenges to the calculations actually used by the EPA.

A.

The state's plan, as originally submitted, was quite summary in nature. It simply stated existing and projected reactive hydrocarbon emissions. The only explanation was by way of reference to a study entitled "Hydrocarbon Control Strategies for the State of Texas," Document 4 of the record.

* * *

We conclude that the EPA was not arbitrary or capricious when it rejected Texas' chemical processing reactive hydrocarbon inventory. The figures submitted by Texas were not only apparently quite different from those expected by the EPA, but they were unsupported by intelligible explanations or source material.

* * *

We turn now to the issue whether the EPA, having reasonably rejected Texas' inventory calculations, was arbitrary or capricious in its own calculations of the inventories on which it based the promulgated regulations.

B.

Since no studies have inventoried the actual reactive content of specific emission sources in Texas, the EPA determined the reactive component by applying a "reactivity factor" to total hydrocarbons. The reactivity factor is a number, running from 0 to 1.0, which indicates the degree of reactivity of a source's hydrocarbon emissions. . . . [T]he factors vary widely, both between different types of emission sources and between the EPA's and state's estimates for identical sources. In obtaining its reactivity factors, the EPA looked to "the relationship between reactive and non-reactive components for identical processes and sources in other areas of the country." 38 Fed. Reg. 30,634 (Nov. 6, 1973).

* * *

1. *The Chemical Processing Reactive Inventory*

. . . [T]he EPA applied a reactivity factor of 0.6 to chemical processing emissions. This

figure was derived from empirical studies of chemical industries in Los Angeles and Louisiana, studies which yielded factors of .52 and .47 respectively. The EPA used a 20 per cent higher figure, which in this context benefits Texas, to give the state “every benefit of the doubt” and to account for having eliminated two minor sources of methane from its Region 7 total hydrocarbon inventory.

Petitioners’ only specific criticism of the 0.6 figure is that because the emissions from individual chemical plants vary considerably in reactivity, “it is unjustified to characterize an entire industry by a single reactivity factor.” Even granting that the reactivity factor for particular plants may be quite different from 0.6, we think it not unreasonable for the EPA to adopt that figure on an industry-wide basis. The figure 0.6 represents an average, and accounts for the fact that the individual figures which go into that average may be higher or lower. So long as 0.6 is applied to the sum of total hydrocarbon emissions from a representative array of chemical plants, its use is proper. Noting that petitioners present no empirical or theoretical material which suggests that typical emissions from the Texas chemical industry are substantially more reactive than those in Los Angeles and Louisiana, we conclude that the agency’s use of 0.6 was not arbitrary or capricious.

* * *

CLARK, Circuit Judge, with whom BOYLE, District Judge, joins, specially concurring.

I concur without reservation in the entirety of Judge Bell’s thoroughgoing, able opinion. The sole purpose of this addendum is to highlight the adverse effects flowing from the legislative mandate that judicial review proceedings be injected into the court system at the appellate level.

No formal hearing has ever been held in this highly technical, factually complex matter. The administrative “record” upon which we had to base our review was comprised of only the sparsest of documentation, for it essentially evolved from an act of agency rule-making. To accentuate the problem the agency contracted the services of a private firm for the formulation of most of the rule requirements it ultimately adopted here, so that not even intra-agency background for these actions was available. The writing judge was required to hold both pre and post-argument conferences with counsel for the parties to enable the three of us as a court to comprehend the substance of the issues and conduct a minimally meaningful review.

The subject matter of this action involves the health and welfare of millions of citizens, the continued business vitality of tens of thousands of firms and compliance expenditures costing billions of dollars.

These extensive rights deserve a more orderly process of judicial reflection.

NOTES

1. As the court intimates, the EPA decision-making process on state implementation plans under the Clean Air Act, like the process for adopting NAAQS, is a rulemaking proceeding. The same procedures applicable to the promulgation of NAAQS apply to the promulgation of SIPs (§ 307(d)), although as with the *NRDC* case, these procedures were not adopted until after the decision in *Texas v. EPA*. See also *Buckeye Power, Inc. v. EPA*, 481

F.2d 162 (6th Cir. 1973).

2. Judicial review of EPA's action is governed by the "arbitrary and capricious" standard of review. Compare 5 U.S.C. § 706(2)(A) – (D), which applied to pre-1977 cases, with § 307(d)(9) adopted in the 1977 Amendments to the Act. Thus, the question before the court was not whether Texas' proposed plan was arbitrary and capricious. Rather, the Court had to ascertain whether it was arbitrary and capricious for EPA to have disapproved of the plan. On the other hand, the adequacy of EPA's plan for Texas was judged against the arbitrary and capricious standard of review. Compare the court's decision in the *Texas* case with the Sixth Circuit's decision in *Cincinnati Gas & Electric Company v. EPA*, 578 F.2d 660 (6th Cir. 1978), *cert. denied*, 439 U.S. 1114 (1979).

3. EPA used a "straight rollback model" to determine the impact of hydrocarbon reductions on photochemical oxidant levels. Texas employed a more sophisticated model although EPA rejected the use of that model on the grounds that its reliability had not been adequately demonstrated. Generally, EPA must allow states to use "equivalent modeling, emission inventory, and planning procedures" unless it determines that the proposed techniques are less effective than those specified by the EPA. § 172(c)(8).

4. The *Texas* case illustrates the complexity and uncertainty involved in designing a program to meet the national ambient air quality standards. How long should EPA wait to determine whether or not a plan is working, and what should it do if it determines that additional controls are necessary? Section 110(a)(2)(H)(ii) requires revision of the SIP whenever EPA determines that the current plan is "substantially inadequate" to achieve the national ambient air quality standards. Does this mean that EPA cannot require revision of a SIP if regular violations of the health-based primary standards are not substantial?

5. In estimating the amount of photochemical oxidants produced by the hydrocarbon emissions from chemical processing facilities, EPA used a 0.6 reactivity factor. This is about 20 percent higher than the reactivity factor found to exist for similar emissions in Los Angeles and Louisiana. The reactivity factor describes the volatility of the hydrocarbons. The higher the reactivity factor, the more volatile the hydrocarbons and the more likely the hydrocarbons will form ozone and other photochemical oxidants. How does this higher reactivity factor "benefit" Texas? Consider that Texas had proposed to reduce photochemical oxidants solely through control of stationary sources.

6. EPA's reason for using the higher reactivity factor was to give Texas "every benefit of the doubt". Is it appropriate for EPA to give states the benefit of the doubt when considering a plan that is to keep air pollution below levels necessary to protect the public health? Compare this policy with § 109(b)(1) of the Act which requires EPA to establish primary air quality standards that protect the public health, but still allows for an adequate margin of safety.

7. In 1992, EPA adopted rules defining volatile organic compounds (VOC). 40 C.F.R. 51.100(s) (1996). This is the term most commonly used today to describe hydrocarbons which may contribute to ozone pollution. EPA's rules expressly exclude from the definition of VOCs certain organic compounds which have "negligible photochemical reactivity." *Id.* The policy supported by these rules has taken on new significance with the growing concern regarding stratospheric ozone depletion. See Chapter 11. Some negligibly reactive VOCs are being considered for use as chlorofluorocarbon substitutes. If these substitutes are regulated through

the SIP process, their use might be unnecessarily discouraged.

8. In his concurring opinion, Judge Clark suggests that the procedure used for reaching a decision on the Texas SIP was inadequate. Do you agree? What authority does the court have to require more stringent procedures? See *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978).

9. The concurring opinion also notes that pre- and post-argument conferences were held in this case “to enable [the Court] to comprehend the substance of the issues and conduct a minimally meaningful review”. Should review of the agency’s action have been limited to the administrative record? See § 307(d)(6)(C). Do the judicial conferences in this case invite “post-hoc rationalizations” which were not subject to public review and comment? Compare *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402-419 (1971).

10. Is the Administrator’s decision to approve or disapprove a state implementation plan a major federal action significantly affecting the quality of the human environment for which an environmental impact statement is required? See *Buckeye Power Inc. v. EPA*, 481 F.2d 162 (6th Cir. 1973):

The petitioners contend that the Administrator’s approval of the state plans should be held in abeyance until such time as the Administrator files an Environmental Impact Statement pursuant to the National Environmental Policy Act. (NEPA) 42 U.S.C. §§ 4321 to 4347 (1973 Supp.).

Essentially, acceptance of this argument would mean that an agency whose sole purpose is the improvement of the environment, would have to file an Environment Impact Statement with itself. See *Reorganization Plan No. 3 of 1970*, 84 Stat. 2086. We are in accord with the Third, Fourth and D.C. Circuit holdings that such action on the part of the Administrator is unnecessary.

Id. at 173-74. Perhaps a better reason for not applying NEPA to the SIP approval process is that EPA’s decision is essentially ministerial. If a SIP “meets the criteria set forth in [CAA § 110](a)(2)(A) – (H)” the Administrator must approve it and NEPA’s purpose of promoting better decisions cannot be served. *Arizona v. Thomas*, 829 F.2d 834, 835 (9th Cir. 1987). This issue is now moot because Congress adopted legislation in 1974 expressly exempting all Clean Air Act activities from NEPA. *Energy Supply and Environmental Coordination Act*, 15 U.S.C. § 793(c)(1).

11. Do federal facilities, such as those operated by the Tennessee Valley Authority, have to comply with state implementation plans? In *Hancock v. Train*, 426 U.S. 167 (1976), the Supreme Court held that the Act’s requirement that federal facilities abate air pollution “to the same extent” as any non-governmental entity made such facilities subject to the SIP’s emission standards and compliance schedule, but did not authorize the states to impose on federal facilities administrative and enforcement mechanisms such as permits. The Act was amended in 1977 to provide the states with the authority over federal facilities that had been denied them in *Hancock*. § 118.

KENNECOTT COPPER CORPORATION V. TRAIN526 F.2d 1149 (9th Cir. 1975), *cert. denied*, 425 U.S. 935 (1976)

BROWNING, Circuit Judge:

Kennecott Copper Corporation petitions for review of an order of the Environmental Protection Agency (EPA) rejecting a portion of the State of Nevada's implementation plan under the Clean Air Act relating to control of sulfur dioxide (SO₂), and substituting provisions formulated by EPA. The problem arises from a single source of SO₂ emissions in Nevada—Kennecott's copper smelter at McGill in White Pine County.

EPA based its order upon an interpretation of the Clean Air Act which requires that national air quality standards be met by continuous emission limitations to the maximum extent possible, and that intermittent controls and dispersion systems be used only when continuous emission controls are not economically feasible. This court denied Kennecott's request for a temporary injunction against enforcement of the substitute plan promulgated by EPA but expedited Kennecott's appeal. We affirm EPA's order.

I.

Section 109 of the Clean Air Act requires EPA to promulgate national primary and secondary air quality standards. Section 110 of the Act, applicable to existing sources of pollutants such as Kennecott's McGill smelter, provides that the states must devise plans to implement, maintain, and enforce these national standards. EPA must approve state implementation plans if they are adopted after reasonable notice and hearing, and meet other specified requirements. EPA must disapprove any state plan that does not comply with the statute, and propose and adopt a plan of its own.

EPA approved the provisions of Nevada's implementation plan relating to control strategy except those involving control of SO₂ at Kennecott's McGill smelter, the sole stationary source of this pollutant in the Nevada Intrastate Air Quality Control Region. Nevada submitted an amended plan. EPA rejected the state's amendments, and proposed, and eventually adopted, a plan of its own.

The amended Nevada plan provided for a 60 percent reduction of SO₂ emissions from the McGill smelter by installation of a plant to convert SO₂ to sulfuric acid. When weather conditions are so adverse that the 60 percent reduction in emissions resulting from operation of the acid plant would not be sufficient to maintain national air quality standards, the Nevada plan provided for reducing the level of production at the smelter.

EPA rejected the Nevada plan on the ground that an 86 percent reduction of SO₂ emissions from the McGill smelter was required to achieve air quality standards. EPA recognized that it was not presently economically feasible to install an acid plant or other constant emission control that would reduce SO₂ emission from the McGill smelter more than the 60 percent contemplated by the Nevada plan. The EPA plan therefore provided that, as an interim measure, Kennecott might use continuous emission reduction technology capable of reducing emissions by 60 percent, together with such other controls (including reducing production and use of a tall stack) as might be needed to maintain national air standards. However, EPA's plan also provided that, until full compliance with national air quality standards is achieved entirely by means of continuous emission reduction, Kennecott must undertake a research program to improve continuous emission control technology, and must adopt such improved technology as it becomes available for use at the McGill smelter on an

economically feasible basis.

Kennecott's basic position is that EPA is not authorized to require continuous emission reduction techniques in preference to intermittent controls or other methods for dispersion, or dilution, of pollutants. Kennecott contends that EPA must approve a state implementation plan that provides for any combination of continuous emission controls and alternative control systems devised by the state, so long as the state plan will attain and maintain national air quality standards within the statutory time periods.

This view of the statute underlies Kennecott's opposition to EPA's requirement that Kennecott engage in research to develop and apply constant emission control technology. It is also the principal source of Kennecott's objection to EPA's determination that an 86 percent reduction in SO₂ emissions from the McGill smelter is required to meet national air quality standards. EPA's calculation rests upon measurements made prior to the installation of a new 750-foot tall smokestack at McGill. Kennecott submitted data to EPA indicating that the new tall stack resulted in a 92 percent decrease in ground level SO₂ concentrations. EPA refused permanent credit for this reduction because, in EPA's view, the statute requires use of continuous emission reduction technology, as opposed to dispersion techniques, whenever economically feasible.

II.

EPA bases the requirement of constant emission controls upon section 110(a)(2)(B) of the Clean Air Act. This subsection provides that EPA shall approve a state implementation plan if "it includes emission limitations, schedules, and timetables for compliance with such limitations, and such other measures *as may be necessary* to insure attainment and maintenance of such primary or secondary standard, including, but not limited to, land-use and transportation controls; . . ." (emphasis added).

EPA reads the phrase "as may be necessary" as modifying only "such other measures," and not "emission limitations." In EPA's view, measures other than emission limitations are therefore permissible only if "necessary" to achieve applicable air quality standards; such "other measures" are not "necessary" if economically feasible emission limitation technology is available.

* * *

In *Natural Resources Defense Council*, the Fifth Circuit held that EPA may approve tall stack dispersion techniques in a state implementation plan "only (1) if it is demonstrated that emission limitation regulations included in the plan are sufficient *standing alone*, without the dispersion strategy, to attain the standards; or (2) if it is demonstrated that emission limitation sufficient to meet the standard is unachievable or infeasible, and that the state has adopted regulations which will attain the maximum degree of emission limitation achievable." 489 F.2d at 410 (emphasis in original). We agree, in general, with the Fifth Circuit's analysis (489 F.2d at 403-09) of the history and contents of the Clean Air Act Amendments of 1970 leading to this conclusion.

In *Big Rivers Electric Corp.*, the Sixth Circuit extended the Fifth Circuit's decision to intermittent emission control systems, holding that section [110(a)(2)(B)] authorizes EPA to reject state plans providing for the use of intermittent emission control systems without a showing that constant emission controls are unavailable. The Sixth Circuit based its conclusion upon the Fifth Circuit's analysis of the Clean Air Act Amendments of 1970, and upon the Supreme Court's discussion of section [110(a)(2)(B)] in *Train v. Natural Resources*

Defense Council. *Train* parses section [110(a)(2)(B)] as EPA's interpretation suggests (421 U.S. at 67), and adopts the position that a state plan must include provisions regulating the composition of substances emitted from a given source. 421 U.S. at 78. The Sixth Circuit noted that since composition means "kind and amount," *Train* recognizes that a state plan must limit the amount of a pollutant. 523 F.2d at 21-22.

We agree with the Sixth Circuit that *Train* adds significant support to EPA's interpretation of section [110(a)(2)(B)] as expressing a preference for emission limitations. Intermittent control systems (such as those restricting production, or utilizing less polluting fuels, during periods of adverse weather) do limit the amount of pollutant emitted while such controls are being applied. However, the reliability and enforceability of such controls is questionable; they may not be implemented when they are in fact needed. Moreover, there is no assurance that temporary reductions in emissions resulting from such controls will not be balanced, or even exceeded, by an increase in the amount of pollutant emitted when weather conditions improve and production is increased to make up for prior losses, or more polluting fuels are again used. Thus, intermittent controls, like tall stacks, may only disperse the pollutant rather than reduce it. Tall smokestacks disperse a pollutant through greater quantities of air; intermittent control systems disperse pollutant peaks through longer periods of time. Neither assures a reduction in the quantity of the pollutant eventually emitted. Under section [110(a)(2)(B)], EPA may require that assurance. We therefore agree with the Sixth Circuit that EPA acted within its authority in refusing to accept intermittent controls as adequate compliance with the statute.

* * *

IV.

Kennecott spent \$4,000,000 to implement the Nevada plan, but suspended further construction on the \$30,000,000 project pending completion of this review proceeding. Kennecott states that the McGill smelter will only support the expenditures required by the Nevada plan, and that the smelter must close if Kennecott is required, in addition, to conduct research to devise new constant control technology which would be economically feasible at McGill.

EPA's plan requires the same immediate capital outlay as the Nevada plan with which Kennecott has said it can comply. Contrary to Kennecott's contention, EPA's plan would not expose Kennecott to the risk that it would be required to make further capital investments for the installation of uneconomic continuous emission control systems in the future. As EPA has undertaken to assure Kennecott, under EPA's interpretation of section [110(a)(2)(B)], EPA could not compel Kennecott to install additional emission reduction systems at McGill unless it were economically feasible for Kennecott to do so.

The order of the Environmental Protection Agency is sustained.

NOTES

1. Nevada proposed to require a 60 percent reduction of Kennecott's McGill smelter SO₂ emissions. On those days when a 60 percent reduction would not be sufficient to meet the ambient air quality standards the McGill smelter would be required to reduce production. Why shouldn't a state allow a company to reduce pollution through production cut-backs rather than

emission limits? One response offered by the court without explanation is that the “reliability and enforcement ability of such controls is questionable.” Why so?

2. Following the old shibboleth “the solution to pollution is dilution,” Kennecott built a 750 foot tall smokestack at the McGill smelter. By releasing emissions through its tall stack, Kennecott was able to disperse its pollutants over a wider area and thus more easily avoid violation of the ambient air quality standards. EPA, however, refused Kennecott any credit for the reduction, again arguing that the statute required continuous emissions reductions rather than dispersion techniques. If ambient air quality standards can be achieved through dispersion techniques why shouldn’t EPA approve them? One response might be that such dispersion techniques promote acid deposition in areas far from the pollution sources. A study by the Environmental Defense Fund, a national environmental organization, “established a direct correlation between sulfur dioxide emission levels at 11 smelters in Arizona, Nevada, New Mexico, and Utah, and levels of acidity in precipitation at seven monitoring stations in Arizona, Colorado, Idaho and Wyoming.” See 16 Env’t. Rep. (BNA) 742 (Aug. 30, 1985). Indeed, the acid deposition control program established under Title IV of the Act is premised on the theory that SO₂ emissions are a more or less fungible quantity capable of being traded nationwide. See Chapter 9, *infra*. See also, *Alabama Power Company v. Costle*, 636 F.2d 323 (D.C. Cir. 1979) discussed at note 7, *infra*.

3. The 1990 Amendments substantially revised § 110(a)(2) to reflect the many significant changes in other parts of the law. Section 110(a)(2)(B), at issue in the Kennecott case, now appears in revised form at § 110(a)(2)(A). The new provision expands the scope of a state’s responsibility under a SIP to include “enforceable emission limits, other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights) . . . as may be necessary or appropriate to meet the applicable requirements of this chapter.” § 110 (a)(2)(A).

4. In 1977, Congress amended the Clean Air Act to address stack heights. Section 123 of the Act provides in relevant part as follows:

(a) The degree of emission limitation required for control of any air pollutant under an applicable implementation plan under this subchapter shall not be affected in any manner by —

(1) so much of the stack height of any source as exceeds good engineering practice (as determined under regulations promulgated by the Administrator), or

(2) any other dispersion technique. . . .

(c) . . . For purposes of this section, good engineering practice means, with respect to stack heights, the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies and wakes which may be created by the source itself, nearby structures or nearby terrain obstacles (as determined by the Administrator). For purposes of this section such height shall not exceed two and a half times the height of such source unless the owner or operator of the source demonstrates, after notice and opportunity for public hearing, to the satisfaction of the Administrator, that a greater height is necessary as provided under the preceding sentence. In no event may the Administrator prohibit any increase in any stack height or restrict in any manner the stack height of any source.

The Act exempts from this section dispersion techniques implemented prior to 1971. Note that “dispersion technique” is defined broadly to encompass “any intermittent or supplemental control of air pollutants varying with atmospheric conditions.” § 123(b). In 1982, the Court of Appeals for the District of Columbia Circuit struck down in part the regulations promulgated by EPA to implement this section. *Sierra Club v. EPA*, 719 F.2d 436 (D.C. Cir. 1983). New rules were promulgated in 1985 and again challenged in federal court. For the most part these rules were upheld. *Natural Resources Defense Council, Inc. v. Thomas*, 838 F.2d 1224 (D.C. Cir. 1988), *cert. denied*, 488 U.S. 888 (1988). The current rules on stack height and intermittent controls are found at 40 C.F.R. §§ 51.118, .119; *see also*, 40 C.F.R. § 51.100(hh), (ii), and (nn) (1996) which further define “dispersion technique”, “good engineering practice”, and “intermittent control system”.

5. In *Dow Chemical Co. v. EPA*, 635 F.2d 559 (6th Cir. 1980), *cert. denied*, 452 U.S. 939 (1981), Dow had devised a scheme to use low sulfur coal at its old power plants during those periods when its normal emissions from high sulfur coal would cause violations of the ambient air quality standards. Since Dow adopted this scheme, no recorded instance of a violation had occurred in Midland County, Michigan, where Dow’s facilities are located. Nonetheless, EPA refused to approve a revision of the Michigan SIP to allow Midland County to be redesignated an attainment area for SO₂. EPA claimed that to do so would violate § 123. How should the court rule?

6. The *Sierra Club* decision referenced in note 4 provides an informative discussion of the purpose and intent behind § 123:

In introducing the bill on the Senate floor, Senator Muskie criticized the 1976 guidelines for allowing any use of tall stacks whatsoever in meeting ambient standards: “Far from prohibiting the construction of tall stacks or the use of intermittent controls, the guidelines provide that once minimal emission control requirements are met, polluters are encouraged to substitute unlimited stack height for any further control of emissions.” 123 Cong. Rec. 18,027 (1977). The mood in the House was the same, *id.* at 16,203 (remarks of Rep. Waxman, a sponsor of the House bill) (“The committee has unequivocally rejected the use of tall stacks and intermittent controls as a final means of compliance with the Clean Air Act’s requirements.”), and in section 123 of the amended Act Congress banned virtually all reliance on tall stacks or “any other dispersion technique” in achieving compliance with ambient air quality standards, § 123(a).

Congress did not, however, actually prohibit tall stacks or limit their height; in fact section 123 specifically enjoins the EPA Administrator (“the Administrator”) from prohibiting any increase in stack height or restricting the height of any stack in any manner. *Id.* § 123(c). Rather, the law limits the credit that may be obtained for such stack height in determining whether the plant will cause ambient air standards to be violated or increase pollution by too large an increment. The credit system is based on techniques of modeling whereby, via mathematical or small-scale physical demonstrations, a plant’s emissions can be assumed to emerge from a certain stack height and then mapped as they fall to earth in order to see their effect on ambient pollution. Thus, section 123 is intended to eliminate any credit a plan might receive for the dispersive effects of a tall stack in the calculation of its emissions limitations, although the stack itself remains in place.

There were essentially three reasons for Congress' refusal to allow reliance on tall stacks and intermittent control measures. First, dispersion techniques do not reduce the amount of pollution in the air, but merely spread it around, exporting it to other areas where it is too late to control the problem, and exposing previously pristine areas to contamination. *See, e.g.*, House Report, *supra* p. 440, at 84-85. Second, the long-range transport of certain pollutants was also linked to the formation of "acid rain," which is precipitation containing acidic derivations of sulfur oxide and nitrogen oxide emissions. Acid rain was thought responsible for reduced soil and water productivity in certain areas, particularly the Northeast and Canada. *See, e.g., id.* at 83-84, 85-86; 123 Cong. Rec. 18,026 (1977) (remarks of Sen. Muskie). Third, intermittent control systems, which are dependent on synchronizing plant operation with weather conditions, were thought to be unreliable and virtually impossible to enforce. *See, e.g. id.*, House Report, *supra* p. 440, at 82-83, 87.

719 F.2d 436, 440-441 (D.C. Cir. 1983).

7. When considering whether a source will violate ambient air quality standards should the agency base its estimate of ambient air quality on the assumption that no pre-existing sources constructed after 1970 use stacks in excess of § 123 height limits? In *Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979) the court answered in the affirmative:

Industry petitioners read Section 123 as a ban only on administrative consideration of stacks taller than warranted by good engineering practice (GEP) as an alternative to emission limitations. So, industry concedes, when a facility with a tall stack—a term that really covers a too-tall stack—seeks a permit and it must be determined whether that facility's emissions will threaten a violation of a national ambient standard or an increment exceedance, the calculation must be predicated on the false assumption that the stack has only GEP height. EPA interprets the mandate of Section 123 more broadly, declaring that it further requires emissions from all preexisting sources with tall stacks that were built after the effective date of the 1970 Act, and hence were not grandfathered, to be modeled as though the emissions proceeded from GEP-height stacks when ascertaining the emission limitations to be imposed on new facilities.

* * *

The language of Section 123(a), though not necessarily reflective of a conscious resolution of the point in dispute, is certainly more amenable to EPA's construction. The section specifies that the degree of emission limitation required for control of any air pollutant "shall not be affected in any manner by . . . so much of the stack height of any source as exceeds good engineering practice . . ." The term "emission limitation" includes any requirement imposed on a source by EPA or a state which restricts the quantity, rate, or concentration or air pollutants on a continuous basis. The interpretation urged by industry petitioners contravenes the natural import of these words, as it would have the degree of emission limitation required for a source reduced by the fact that neighboring, preexisting sources with tall stacks disperse their emissions over a broader region, thus resulting in lower concentrations in the immediate vicinity.

The policy of Section 123, as gleaned from examination of its genesis and

progress in Congress, is also supportive of EPA's interpretation. This provision originated in the House, and the 1977 House Report dealt extensively with the problem of dispersion techniques. In addition to disapproving tall stacks and other dispersion-dependent techniques in lieu of constant controls, the House Report detailed some independently deleterious effects of tall stacks. Among other things, the report noted that tall stacks, by increasing the transportation of pollutants, may lead to production of derivative pollutants, such as suspended sulfates and nitrates, which pose a greater health hazard than the parent compounds. Tall stacks also transport pollution problems to distant areas and states "where it is too late to control pollution."

Id. at 389-391. The *Alabama Power* case was followed by two subsequent lawsuits concerning complex questions regarding EPA's stack height rules. *Natural Resources Defense Council, Inc. v. Thomas*, 838 F.2d 1224 (D.C. Cir. 1988), *cert. denied*, 488 U.S. 888 (1988); *Sierra Club v. EPA*, 719 F.2d 436 (D.C. Cir. 1983), *cert. denied*, 468 U.S. 1204 (1984).

8. The court notes, with approval, that EPA has assured Kennecott that it would not require Kennecott to install additional emission reduction systems at the McGill smelter "unless it were economically feasible . . . to do so." Is EPA's position consistent with the Supreme Court's holding one year later in *Union Electric Co. v. EPA*, 427 U.S. 246 (1976), the case that follows?

9. The subsequent history of the McGill smelter controversy is described in *Kennecott Copper Corp. v. Costle*, 572 F.2d 1349 (9th Cir. 1978), *infra* at Chapter 6, section G.

B. Economic and Technological Feasibility

UNION ELECTRIC CO. v. EPA

427 U.S. 246 (1976)

Mr. Justice MARSHALL delivered the opinion of the Court.

I

After the Administrator of the Environmental Protection Agency (EPA) approves a state implementation plan under the Clean Air Act, the plan may be challenged in a court of appeals within 30 days, or after 30 days have run if newly discovered or available information justifies subsequent review. We must decide whether the operator of a regulated emission source, in a petition for review of an EPA-approved state plan filed after the original 30-day appeal period, can raise the claim that it is economically or technologically infeasible to comply with the plan.

* * *

On April 30, 1971, the Administrator promulgated national primary and secondary standards for six air pollutants he found to have an adverse effect on the public health and welfare. 40 C.F.R. pt. 50 (1975). *See* § 108(a). Included among them was sulfur dioxide, at issue here. 40 C.F.R. §§ 50.4-50.5 (1975). After the promulgation of the national standards, the State of Missouri formulated its implementation plan and submitted it for approval. Since sulfur dioxide levels exceeded national primary standards in only one of the State's five air

quality regions—the Metropolitan St. Louis Interstate region, 40 C.F.R. § 52.1321 (1975)—the Missouri plan concentrated on a control strategy and regulations to lower emissions in that area. The plan's emission limitations were effective at once, but the State retained authority to grant variances to particular sources that could not immediately comply. Mo.Rev.Stat. § 203.110 (1972). The Administrator approved the plan on May 31, 1972. See 40 C.F.R. § 52.1320. (1995).

Petitioner is an electric utility company servicing the St. Louis metropolitan area, large portions of Missouri, and parts of Illinois and Iowa. Its three coal-fired generating plants in the metropolitan St. Louis area are subject to the sulfur dioxide restrictions in the Missouri implementation plan. Petitioner did not seek review of the Administrator's approval of the plan within 30 days, as it was entitled to do under § 307(b)(1) of the Act, but rather applied to the appropriate state and county agencies for variances from the emission limitations affecting its three plants. Petitioner received one-year variances, which could be extended upon reapplication. The variances on two of petitioner's three plants had expired and petitioner was applying for extensions when, on May 31, 1974, the Administrator notified petitioner that sulfur dioxide emissions from its plants violated the emission limitations contained in the Missouri plan. See 40 Fed. Reg. 3566 (1975). Shortly thereafter petitioner filed a petition in the Court of Appeals for the Eighth Circuit for review of the Administrator's 1972 approval of the Missouri implementation plan.

Section 307(b)(1) allows petitions for review to be filed in an appropriate court of appeals more than 30 days after the Administrator's approval of an implementation plan only if the petition is "based solely on grounds arising after such 30th day." Petitioner claimed to meet this requirement by asserting, inter alia, that various economic and technological difficulties had arisen more than 30 days after the Administrator's approval and that these difficulties made compliance with the emission limitations impossible. The Court of Appeals ordered briefing on the question of its subject-matter jurisdiction to hear the case and, after argument, granted the motions of the EPA and intervener-respondents, the Attorney General of Missouri and the Missouri Air Conservation Commission, to dismiss the petition for review of lack of jurisdiction.

The court held that "only matters which, if known to the Administrator at the time of his action [in approving a state implementation plan], would justify setting aside that action are properly reviewable after the initial 30 day review period." 515 F.2d 206, 216 (8th Cir. 1975). Since, in the court's view, claims of economic and technological infeasibility could not properly provide a basis for the Administrator's rejecting a plan, such claims could not serve at any time as the basis for a court's overturning an approved plan. Accordingly, insofar as petitioner's claim of newly discovered or available information was grounded on an assertion of economic and technological infeasibility, the court held itself to be without jurisdiction to consider the petition for review, and so dismissed the petition. In so holding the Court of Appeals considered and rejected the contrary or partially contrary holdings of three other Circuits. *Buckeye Power, Inc. v. EPA*, 481 F.2d 162, 168-169 (6th Cir. 1973) (*but see id.*, at 173); *Appalachian Power Co. v. EPA*, 477 F.2d 495, 505-507 (4th Cir. 1973); *Duquesne Light Co. v. EPA*, 481 F.2d 1 (3rd Cir. 1973); *Getty Oil Co. v. Ruckelshaus*, 467 F.2d 349 (3rd Cir. 1972), *cert. denied*, 409 U.S. 1125 (1973). [Citations omitted.] On the other hand, the Eighth Circuit found support for its position in the decisions of several other Circuits. *South Terminal Corp. v. EPA*, 504 F.2d 646, 675-676 (1st Cir. 1974); *Texas v. EPA*, 499 F.2d 289, 317 (5th Cir. 1974); *Natural Resources Defense Council v. EPA*, 507 F.2d 905, 914 (9th Cir. 1974). See also *Indiana & Michigan Electric Co. v. EPA*, 509 F.2d 839, 843-845 (7th Cir. 1975). Cf.

Buckeye Power, Inc. v. EPA, 525 F.2d 80 (6th Cir. 1975). We granted certiorari to resolve the conflict among the Circuits, 423 U.S. 821 (1975), and we now affirm.

II

A.

We reject at the outset petitioner's suggestion that a claim of economic or technological infeasibility may be considered upon a petition for a review based on new information and filed more than 30 days after approval of an implementation plan even if such a claim could not be considered by the Administrator in approving a plan or by a court in reviewing a plan challenged within the original 30-day appeal period. In pertinent part § 307(b)(1) provides:

A petition for review of the Administrator's action in approving or promulgating any implementation plan under section 110 . . . may be filed only in the United States Court of Appeals for the appropriate circuit. Any such petition shall be filed within 30 days from the date of such promulgation; approval, or action, or after such date if such petition is based solely on grounds arising after such 30th day.

Regardless of when a petition for review is filed under § 307(b)(1), the court is limited to reviewing "the Administrator's action in approving . . . [the] implementation plan. . . ." Accordingly, if new "grounds" are alleged, they must be such that, had they been known at the time the plan was presented to the Administrator for approval, it would have been an abuse of discretion for the Administrator to approve the plan. To hold otherwise would be to transfer a substantial responsibility in administering the Clean Air Act from the Administrator and the state agencies to the federal courts.

B.

Since a reviewing court—regardless of when the petition for review is filed—may consider claims of economic and technological infeasibility only if the Administrator may consider such claims in approving or rejecting a state implementation plan, we must address ourselves to the scope of the Administrator's responsibility. The Administrator's position is that he has no power whatsoever to reject a state implementation plan on the ground that it is economically or technologically infeasible, and we have previously accorded great deference to the Administrator's construction of the Clean Air Act. See *Train v. NRDC*, 421 U.S., at 75. After surveying the relevant provisions of the Clean Air Amendments of 1970 and their legislative history, we agree that Congress intended claims of economic and technological infeasibility to be wholly foreign to the Administrator's consideration of a state implementation plan.

As we have previously recognized, the 1970 Amendments to the Clean Air Act were a drastic remedy to what was perceived as a serious and otherwise uncheckable problem of air pollution. The Amendments place the primary responsibility for formulating pollution control strategies on the States, but nonetheless subject the States to strict minimum compliance requirements. These requirements are of a "technology-forcing character," *Train v. NRDC*, *supra*, at 91, and are expressly designed to force regulated sources to develop pollution control devices that might at the time appear to be economically or technologically infeasible.

This approach is apparent on the face of § 110(a)(2). The provision sets out eight criteria that an implementation plan must satisfy, and provides that if these criteria are met and if the plan was adopted after reasonable notice and hearing, the Administrator "shall approve" the proposed state plan. The mandatory "shall" makes it quite clear that the Administrator is not to be concerned with factors other than those specified, *Train v. NRDC*, *supra*, at 71 n. 11, 79,

and none of the eight factors appears to permit consideration of technological or economic infeasibility. Nonetheless, if a basis is to be found for allowing the Administrator to consider such claims, it must be among the eight criteria, and so it is here that the argument is focused.

It is suggested that consideration of claims of technological and economic infeasibility is required by the first criterion that the primary air quality standards be met “as expeditiously as practicable but . . . in no case later than three years . . .” and that the secondary air quality standards be met within a “reasonable time.” § 110(a)(2)(A). The argument is that what is “practicable” or “reasonable” cannot be determined without assessing whether what is proposed is possible. This argument does not survive analysis.

Section 110(a)(2)(A)’s three-year deadline for achieving primary air quality standards is central to the Amendments’ regulatory scheme and, as both the language and the legislative history of the requirement make clear, it leaves no room for claims of technological or economic infeasibility. The 1970 congressional debate on the Amendments centered on whether technology forcing was necessary and desirable in framing and attaining air quality standards sufficient to protect the public health, standards later termed primary standards. The House version of the Amendments was quite moderate in approach, requiring only that health-related standards be met “within a reasonable time.” H.R. 17255, 91st Cong., 2d Sess., § 108(c)(1)(C)(i) (1970). The Senate bill, on the other hand, flatly required that, possible or not, health-related standards be met “within three years.” S. 4358, 91st Cong., 2d Sess., § 111(a)(2)(A) (1970).

The Senate’s stiff requirement was intended to foreclose the claims of emission sources that it would be economically or technologically infeasible for them to achieve emission limitations sufficient to protect the public health within the specified time. As Senator Muskie, manager of the Senate bill, explained to his chamber:

The first responsibility of Congress is not the making of technological or economic judgments or even to be limited by what is or appears to be technologically or economically feasible. Our responsibility is to establish what the public interest requires to protect the health of persons. This may mean that people and industries will be asked to do what seems to be impossible at the present time. 116 Cong. Rec. 32901-32902 (1970).

See also id., at 32919 (remarks of Sen. Cooper); 33115 (remarks of Sen. Prouty). This position reflected that of the Senate committee:

In the Committee discussions, considerable concern was expressed regarding the use of the concept of technical feasibility as the basis of ambient air standards. The Committee determined that 1) the health of people is more important than the question of whether the early achievement of ambient air quality standards protective of health is technically feasible; and 2) the growth of pollution load in many areas, even with application of available technology, would still be deleterious to public health.

Therefore, the Committee determined that existing sources of pollutants either should meet the standard of the law or be closed down. . . . S.Rep. No. 91-1196, pp. 2-3 (1970).

The Conference Committee and, ultimately, the entire Congress accepted the Senate’s three-year mandate for the achievement of primary air quality standards, and the clear import of that decision is that the Administrator must approve a plan that provides for attainment of the primary standards in three years even if attainment does not appear feasible. In rejecting

the House's version of reasonableness, however, the conferees strengthened the Senate version. The Conference Committee made clear that the States could not procrastinate until the deadline approached. Rather, the primary standards had to be met in less than three years if possible; they had to be met "as expeditiously as practicable." § 110(a)(2)(A). Whatever room there is for considering claims of infeasibility in the attainment of primary standards must lie in this phrase, which is, of course, relevant only in evaluating those implementation plans that attempt to achieve the primary standard in less than three years.

It is argued that when such a state plan calls for proceeding more rapidly than economics and the available technology appear to allow, the plan must be rejected as not "practicable." Whether this is a correct reading of § 110(a)(2)(A) depends on how that section's "as expeditiously as practicable" phrase is characterized. The Administrator's position is that § 110(a)(2)(A) sets only a minimum standard that the States may exceed in their discretion, so that he has no power to reject an infeasible state plan that surpasses the minimum federal requirements—a plan that reflects a state decision to engage in technology forcing on its own and to proceed more expeditiously than is practicable. On the other hand, petitioner and Amici supporting its position argue that § 110(a)(2)(A) sets a mandatory standard that the States must meet precisely and conclude that the Administrator may reject a plan for being too strict as well as for being too lax. Since the arguments supporting this theory are also made to show that the Administrator must reject a state plan that provides for achieving more than the secondary air quality standards require, we defer consideration of this question in order to outline the development and content of the secondary standards provision of § 110(a)(2)(A).

Secondary air quality standards, those necessary to protect the public welfare, were subject to far less legislative debate than the primary standards. The House version of the Amendments treated welfare-related standards together with health-related standards, and required both to be met "within a reasonable time." H.R. 17,255, 91st Cong., 2d Sess., §§ 107(e)(1), 108(c)(1)(C)(i) (1970). The Senate bill, on the other hand, treated health- and welfare-related standards separately and did not require that welfare-related standards be met in any particular time at all, S. 4358, 91st Cong., 2d Sess. §§ 110(a)(3), 110(b), 111(a)(2)(A) (1970), although the Committee Report expressed the desire that they be met "as rapidly as possible." S. Rep. No. 91-1196, p. 11 (1970). The final Amendments also separated welfare-related standards from health-related standards, labeled them secondary air quality standards, and adopted the House's requirement that they be met within a "reasonable time." §§ 109(b), 110(a)(2)(A). Thus, technology forcing is not expressly required in achieving standards to protect the public welfare.

It does not necessarily follow, however, that the Administrator may consider claims of impossibility in assessing a state plan for achieving secondary standards. As with plans designed to achieve primary standards in less than three years, the scope of the Administrator's power to reject a plan depends on whether the State itself may decide to engage in technology forcing and adopt a plan more stringent than federal law demands⁷

* * *

Section 116 of the Clean Air Act provides that the States may adopt emission standards

⁷ A different question would be presented if the Administrator drafted the plan pursuant to § 110(c). Cf. *District of Columbia v. Train*, 521 F.2d 971 (1975); *South Terminal Corp. v. EPA*, 504 F.2d 646 (1st Cir. 1974). Whether claims of economic or technical infeasibility must be considered by the Administrator in drafting an implementation plan is a question we do not reach.

stricter than the national standards. Amici argue that such standards must be adopted and enforced independently of the EPA-approved state implementation plan. This construction of §§ 110 and 116, however, would not only require the Administrator to expend considerable time and energy determining whether a state plan was precisely tailored to meet the federal standards, but would simultaneously require States desiring stricter standards to enact and enforce two sets of emission standards, one federally approved plan and one stricter state plan. We find no basis in the Amendments for visiting such wasteful burdens upon the States and the Administrator, and so we reject the argument of Amici.

We read the “as may be necessary” requirement of § 110(a)(2)(B) to demand only that the implementation plan submitted by the State meet the “minimum conditions” of the Amendments. *Train v. NRDC*, 421 U.S. at 71 n. 11. Beyond that, if a State makes the legislative determination that it desires a particular air quality by a certain date and that it is willing to force technology to attain it or lose a certain industry if attainment is not possible such a determination is fully consistent with the structure and purpose of the Amendments, and § 110(a)(2)(B) provides no basis for the EPA Administrator to object to the determination on the ground of infeasibility. See *Train v. NRDC*, *supra*, at 79.

In sum, we have concluded that claims of economic or technological infeasibility may not be considered by the Administrator in evaluating a state requirement that primary ambient air quality standards be met in the mandatory three years. And, since we further conclude that the States may submit implementation plans more stringent than federal law requires and that the Administrator must approve such plans if they meet the minimum requirements of § 110(a)(2), it follows that the language of § 110(a)(2)(B) provides no basis for the Administrator ever to reject a state implementation plan on the ground that it is economically or technologically infeasible. Accordingly, a court of appeals reviewing an approved plan under § 307(b)(1) cannot set it aside on those grounds, no matter when they are raised.

* * *

Perhaps the most important forum for consideration of claims of economic and technological infeasibility is before the state agency formulating the implementation plan. So long as the national standards are met, the State may select whatever mix of control devices it desires, *Train v. NRDC*, *supra*, at 79, and industries with particular economic or technological problems may seek special treatment in the plan itself. Cf. 40 C.F.R. §§ 51.2(b), (d) (1975); S.Rep. No. 91-1196, p. 36 (1970). Moreover, if the industry is not exempted from, or accommodated by, the original plan, it may obtain a variance, as petitioner did in this case; and the variance, if granted after notice and a hearing, may be submitted to the EPA as a revision of the plan. § 110(a)(3)(A). Lastly, an industry denied an exemption from the implementation plan, or denied a subsequent variance, may be able to take its claims of economic or technological infeasibility to the state courts. See, e.g., Mo. Rev. Stat. § 203.130 (1972); Cal. Health & Safety Code § 39506 (West 1973); Pa. Stat. Ann., Tit. 71, § 1710.41 (1962).

While the State has virtually absolute power in allocating emission limitations so long as the national standards are met, if the state plan cannot meet the national standards, the EPA is implicated in any postponement procedure. There are two ways that a State can secure relief from the EPA for individual emission sources, or classes of sources, that cannot meet the national standards. First, if the Governor of the State so requests at the time the original implementation plan is submitted, and if the State provides reasonable interim controls, the Administrator may allow a two-year extension of the three-year deadline for attainment of primary air quality standards if he finds, *inter alia*, that it is technologically infeasible for the

source to comply. § 110(e). Second, again upon application of the Governor of the State, the Administrator may allow a one-year postponement of any compliance date in an implementation plan if he finds, *inter alia*, that compliance is technologically infeasible and that “the continued operation of (the emission source) is essential to national security or to the public health or welfare. . . .” § 110(f). *See Train v. NRDC*, 421 U.S., at 81.

Even if the State does not intervene on behalf of an emission source, technological and economic factors may be considered in at least one other circumstance. When a source is found to be in violation of the state implementation plan, the Administrator may, after a conference with the operator, issue a compliance order rather than seek civil or criminal enforcement. Such an order must specify a “reasonable” time for compliance with the relevant standard, taking into account the seriousness of the violation and “any good faith efforts to comply with applicable requirements.” § 113(a)(4). Claims of technological or economic infeasibility, the Administrator agrees, are relevant to fashioning an appropriate compliance order under § 113(a)(4).

In short, the Amendments offer ample opportunity for consideration of claims of technological and economic infeasibility. Always, however, care is taken that consideration of such claims will not interfere substantially with the primary goal of prompt attainment of the national standards. Allowing such claims to be raised by appealing the Administrator’s approval of an implementation plan, as petitioner suggests, would frustrate congressional intent. It would permit a proposed plan to be struck down as infeasible before it is given a chance to work, even though Congress clearly contemplated that some plans would be infeasible when proposed. And it would permit the Administrator or a federal court to reject a State’s legislative choices in regulating air pollution, even though Congress plainly left it with the States, so long as the national standards were met, the power to determine which sources would be burdened by regulation and to what extent. Technology forcing is a concept somewhat new to our national experience and it necessarily entails certain risks. But Congress considered those risks in passing the 1970 Amendments and decided that the dangers posed by uncontrolled air pollution made them worth taking. Petitioner’s theory would render that considered legislative judgment a nullity, and that is a result we refuse to reach.

Affirmed.

Mr. Justice POWELL, with whom THE CHIEF JUSTICE joins, concurring.

I join the opinion of the Court because the statutory scheme and the legislative history, thoroughly described in the Court’s opinion, demonstrate irrefutably that Congress did not intend to permit the Administrator of the Environmental Protection Agency to reject a proposed state implementation plan on the grounds of economic or technological infeasibility. Congress adopted this position despite its apparent awareness that in some cases existing sources that cannot meet the standard of the law must be closed down.

The desire to impose strong incentives on industry to encourage the rapid development and adoption of pollution control devices is understandable. But it is difficult to believe that Congress would adhere to its absolute position if faced with the potentially devastating consequences to the public that this case vividly demonstrates.

Petitioner is an electric utility supplying power demands in the St. Louis metropolitan area, a large part of Missouri, and parts of Illinois and Iowa. It alleges that it cannot continue to operate if forced to comply with the sulfur dioxide restrictions contained in the Missouri implementation plan approved by the Administrator. Specifically, petitioner alleges that since

the Administrator's approval of the plan, low-sulfur coal has become too scarce and expensive to obtain; reliable and satisfactory sulfur dioxide removal equipment that would enable it to comply with the plan's requirements simply has not been devised; the installation of the unsatisfactory equipment that is available would cost over \$500 million, a sum impossible to obtain by bonds that are contingent on approval by regulatory bodies and public acceptance; and, even if the financing could be obtained, the carrying, operating, and maintenance costs of over \$120 million a year would be prohibitive. Petitioner further alleges that recent evidence has disclosed that sulfur dioxide in the ambient air is not the hazard to public health that it was once thought to be, and that compliance with the sulfur regulation in the Missouri plan is not necessary to the attainment of national primary and secondary ambient air standards in the St. Louis area.

At the risk of civil and criminal penalties enforceable by both the State and Federal Governments, as well as possible citizens' suits, [§§ 113, 304], petitioner is being required either to embark upon the task of installing allegedly unreliable and prohibitively expensive equipment or to shut down. Yet the present Act permits neither the Administrator, in approving the state plan, nor the courts, in reviewing that approval under § 307 of the Act, even to consider petitioner's allegations of infeasibility.

Environmental concerns, long neglected, merit high priority, and Congress properly has made protection of the public health its paramount consideration. See S. Rep. No. 91-1196, p. 2-3 (1970). But the shutdown of an urban area's electrical service could have an even more serious impact on the health of the public than that created by a decline in ambient air quality. The result apparently required by this legislation in its present form could sacrifice the well-being of a large metropolitan area through the imposition of inflexible demands that may be technologically impossible to meet and indeed may no longer even be necessary to the attainment of the goal of clean air.

I believe that Congress, if fully aware of this Draconian possibility, would strike a different balance.

NOTES

1. Under § 307(b)(1) of the Act, challenges to state implementation plans may be filed within 60 days from the date of EPA approval or after 60 days only if the challenge is "based solely on grounds arising after such 60th day." (At the time of the *Union Electric* case only 30 days were allowed for such actions.) *Union Electric's* challenge was filed nearly three years after EPA's approval of the Missouri SIP. Moreover, the Court finds that a claim of economic and technological infeasibility is not a sufficient basis for challenging a SIP whether before or after the 30th day. Why then does the Court proceed to consider the merits of *Union Electric's* claim?

2. In *Union Electric*, the Court holds that economic and technological feasibility may be considered by a state in developing its plan for achieving both primary and secondary standards. What are the limits on the agency's consideration of these factors?

3. If a state fails to submit an acceptable plan to the EPA within the statutory time frame then EPA must promulgate a plan for the state. § 110(c). To what extent must the Administrator consider claims of economic and technological feasibility in promulgating a

plan for a state? You represent a utility which claims it cannot feasibly meet the terms of a plan promulgated by EPA for the state. Alternative strategies are available to achieve the ambient air standards without imposing standards on any person that are not feasible. On what basis, if any, can you challenge EPA's plan?

4. Before the 1990 Amendments, the state implementation plan was the principal mechanism for controlling existing sources of air pollution. New sources have long been required to meet new source performance standards (NSPS) if the construction or modification of the source commenced after the promulgation of the applicable NSPS rules, and major new sources in nonattainment or PSD areas have been subject to permitting and other review requirements since 1977. The 1990 Amendments greatly expanded the number of existing sources that are covered by one or more point-source programs. Two particular programs have brought many existing sources under federal emission standards for the first time. First, most existing electrical utilities are now covered by the Acid Deposition Program of Title IV. Second, while existing sources of hazardous air pollutants were technically covered under the pre-1990 law, few such sources were actually subject to regulation because of problems the EPA had in implementing the pre-1990 program. The 1990 Amendments appear to have solved these implementation problems and will eventually impose point-source requirements on many thousands of existing sources of hazardous air pollutants. Although additional controls on existing sources may be imposed through the SIP, the salutary impacts from the acid deposition control program and the hazardous air pollution program should help control much of the air pollution from existing sources.

5. Compare the *Union Electric* holding with the holding of the Court of Appeals for the Ninth Circuit in *Bunker Hill Co. v. EPA*, 572 F.2d 1286 (9th Cir. 1977). That case involved the degree of emission controls that could be imposed under the Idaho SIP on Bunker Hill's zinc and lead smelters near Kellogg, Idaho. The court stated: "The Clean Air Act . . . requires pollution sources to achieve the highest emission control level that is technologically and economically feasible . . . Conversely, the EPA cannot require a level that is technologically and economically infeasible." Although decided more than one year after *Union Electric* the court never cites the *Union Electric* decision. See also *Cleveland Elec. Illuminating Co. v. EPA*, 572 F.2d 1150, 1164 (6th Cir. 1978), where the court rejected the claims of utility companies that the SO₂ controls imposed by EPA in a federal SIP designed for Ohio were too costly. Citing *Union Electric*, the court stated: "We have genuine doubt that this court has the power to review what we regard as petitioner's slightly disguised economic and technological feasibility arguments."

6. Does economic and technological feasibility ever have a role in SIP review? Consider *National Steel Corp. v. Gorsuch*, 700 F.2d 314, 324 (6th Cir. 1983). That case concerns the State of Michigan's implementation of the RACT ("reasonably available control technology") requirement for existing sources in nonattainment areas. § 172(c)(i). At the time of this decision, RACT was defined by EPA as "the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." 45 Fed. Reg. 59,331(1980). EPA had determined that the RACT requirements in the Michigan SIP were not adequate and had imposed its own RACT standards on the state. The plaintiff steel companies argued that the RACT requirement imposed on Michigan by the EPA was not technologically and economically feasible. Citing *Union Electric* the court held that it need not consider the steel

companies' claims of unfeasibility. Do you agree? See footnote 7 of the *Union Electric* decision.

7. Sections 110(e) and 110(f), described in the *Union Electric* case as authorizing extensions of the primary NAAQS attainment date, and postponement of an individual source's SIP compliance date, no longer remain in the Clean Air Act. Other exceptions, however, remain. The current version of § 110(f) authorizes a Governor to petition the President to declare that a national or regional energy emergency exists. If the President makes such a declaration then the Governor may temporarily suspend a SIP if deemed necessary to address "high levels of unemployment or loss of necessary [residential] energy supplies . . ." *Id.* at § 110(f)(2). Such suspensions may remain in effect for no more than four months. Section 110(g) authorizes a Governor to temporarily suspend a SIP where a SIP revision is pending which meets the requirements of § 110 and which is necessary to prevent the closing for one year or more of an air pollution source where closure would result in "substantial increases in unemployment."

8. "Technology forcing" mechanisms are commonplace in environmental statutes. The basic approach is for Congress to impose a standard that must be met several years in the future. At the time the standard is set forth in the law the technology does not exist to achieve it. Facing the prospect of having to shut down if they cannot achieve the standard by the statutory deadline, the industry is "forced" to search for a technological solution that will allow it to continue to operate. Does technology forcing work? See D. Bruce La Pierre, *Technology Forcing and Federal Environmental Protection Statutes*, 62 IOWA L. REV. 771 (1976). Professor McGarity offers qualified support for technology-forcing in some contexts, as for example where a single substance like airborne lead is causing serious environmental problems; but he argues that it is inappropriate when an environmental problem has complex causes, or where the consequences of failing to force new technologies are relatively modest. Thomas O. McGarity, *Radical Technology-Forcing in Environmental Regulation*, 27 LOY. L.A. L. REV. 943, 957-58 (1994). What kinds of air pollution problems might best be addressed through technology-forcing? What kinds are ill-suited to this approach?

9. Despite the Court's ruling in *Union Electric*, the company neither ceased its operations nor met the emission standards in the Missouri SIP. The subsequent history of Union Electric's struggle to avoid compliance with the emissions standards of the Missouri SIP is described in JOHN E. BONINE & THOMAS O. MCGARITY, *THE LAW OF ENVIRONMENTAL PROTECTION*, at 430-31 (West 2d ed. 1992).

10. EPA is required to "assemble and publish a comprehensive document for each state setting forth all requirements of the applicable implementation plan." § 110(h). The 1977 Amendments had required an annual publication for each state. The 1990 Amendments require an initial publication by November 15, 1995, and every three years thereafter. Notice regarding the availability of these documents must be published in the Federal Register. Relevant materials regarding implementation plans for each state appear at 40 C.F.R. part 52 (1996).

C. Nonattainment Areas

The Clean Air Act has succeeded in reducing, or at least stabilizing, ambient pollution levels for all of the six criteria pollutants. Information regarding historical trends and progress toward achieving the ambient air quality standards is reported by EPA annually in its National Air Quality and Emissions Trend Report. Background information from this report on each of the six criteria pollutant is summarized in Chapter 1, *supra*. The most recent annual report, as well as a report summarizing data for the period between 1900 and 1995, are available on the world wide web at <http://www.epa.gov/oar/emtrnd/>. Set forth is an excerpt from EPA's most recent Emissions Trend Report, published in October, 1996.

NATIONAL AIR QUALITY AND EMISSIONS TREND REPORT, 1995 EPA 454/R-96-005 (October, 1996)

This is the twenty-third annual report documenting air pollution trends in the United States. The primary emphasis of this report is on those pollutants for which the United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS). EPA set these standards to protect public health and welfare. Primary standards are designed to protect public health, including sensitive populations such as children and the elderly, while secondary standards protect public welfare, such as the effects of air pollution on vegetation, materials, and visibility. There are six criteria pollutants with primary standards: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter whose aerodynamic size is less than or equal to 10 micrometers (PM-10), and sulfur dioxide (SO₂).

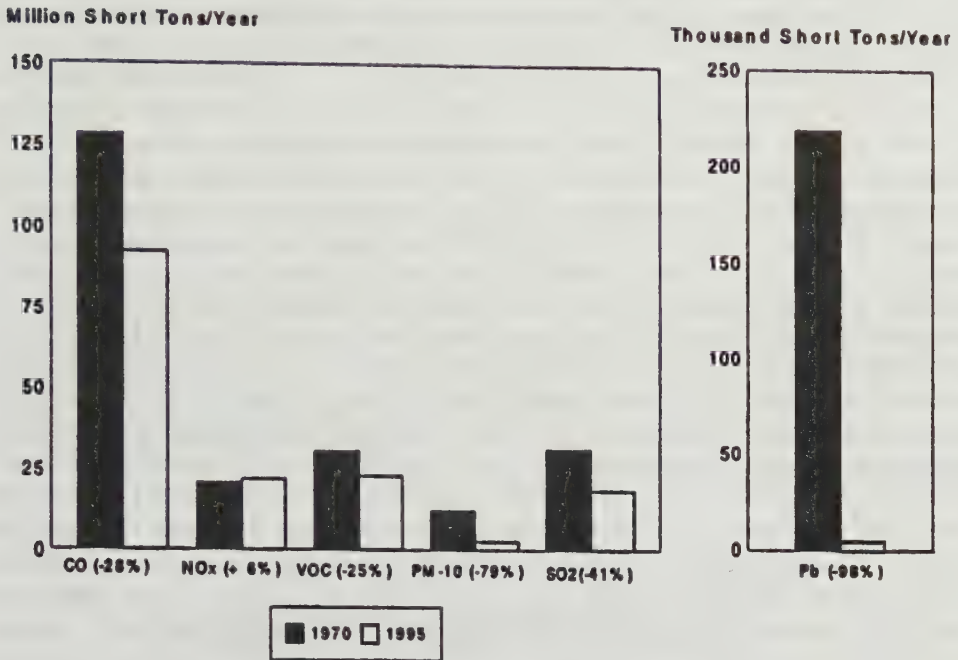
This report tracks two kinds of trends for the criteria pollutants. **Air quality concentrations** are based on actual direct measurements of pollutant concentrations in the air at selected monitoring sites across the country, while **emissions** are calculated estimates of the total tonnage of these pollutants released into the air annually. Emission estimates are derived from many factors, including the level of industrial activity, technology changes, fuel consumption, vehicle miles traveled (VMT), and other activities that cause air pollution. Emission numbers also reflect changes in air pollution regulations and the installation of controls on the sources of emissions.

* * *

The criteria pollutant analyses reported in Chapter 2 focus primarily on 10-year trends. Long-term trends based on available data from the 1970s and early 1980s are also provided. Additionally, changes in pollutant concentrations over the past year, and one-year snapshots of pollutant concentrations and emissions categories for 1995 are presented.

Figure 1-1 summarizes the long-term changes in emissions for all six NAAQS pollutants between 1970 and 1995. Emissions are used to portray long-term trends because they are available for longer time periods than air quality concentrations. The figure shows that emissions for all criteria pollutants except nitrogen oxides decreased between 1970 and 1995, the greatest improvement being a 98 percent decrease in lead emissions. These reductions occurred during a period of significant population and economic growth. Since 1970, total U.S. population increased 28 percent, VMT increased 116 percent, and the gross domestic product increased 99 percent.

Figure 1-1. Summary of emissions changes for all six NAAQS pollutants between 1970 and 1995.



* * *

Ten-year trends in air quality and emissions are summarized below:

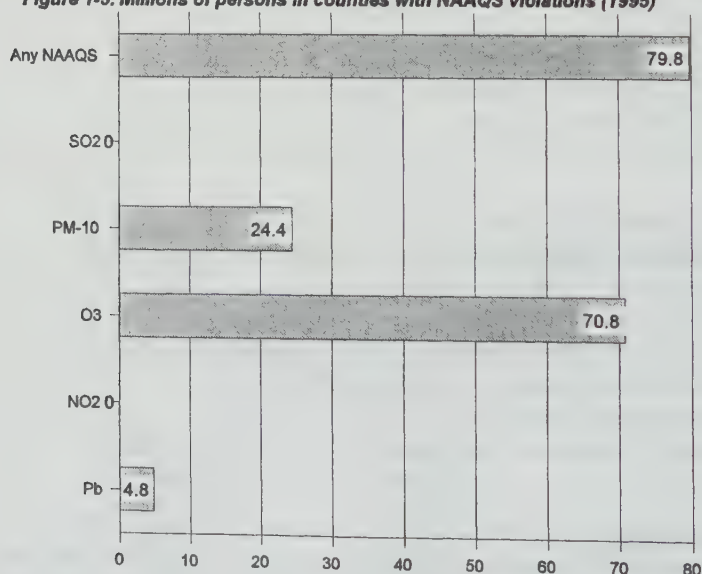
Ten-Year Air Quality Emissions Trends 1986-1995

	Air Quality % Change	Emissions % Change
Carbon Monoxide	-37%	-16%
Lead	-78%	-32%
Nitrogen Dioxide	-14%	-3%(NO _x)
Ozone	-6%	-9% (VOC)
PM-10	-22%	-17%
Sulfur Dioxide	-37%	-18%
*PM-10% changes are based on 1988-1995 data.		

Improvements in air quality between 1986 and 1995 are a direct result of effective implementation of clean air laws and regulations. Despite the growth in U.S. population, total VMT, and gross domestic product since 1970, there is strong evidence of a general trend of air quality improvement. This improvement is supported by the observed decrease in emissions of all criteria pollutants over the past 10 years.

While progress has been made, it is important not to lose sight of the magnitude of the air pollution problem that still remains. Based upon monitoring data submitted to EPA's data base, approximately 80 million people in the United States reside in counties that did not meet the air quality standard for at least one of the NAAQS pollutants for the single year 1995. Ground level ozone is the largest problem, based on both population and number of areas not meeting the standards. In 1995, 71 million people lived in counties that exceeded the ozone standard. These exceedances are due in part to the hot, dry summer which was conducive to ozone formation. However, 1995 is the fourth consecutive year that every monitoring site in the country met the NO_2 standard. With respect to SO_2 , it is important to note that while most monitoring sites are currently meeting ambient standards, SO_2 problems in the United States are usually localized and are caused by point sources that are typically identified by modeling rather than by routine ambient monitoring.

Figure 1-5. Millions of persons in counties with NAAQS violations (1995)



The population estimates in Figure 1-5 are based upon only a single year of data, 1995, and only consider counties with monitoring data for each pollutant. These population estimates are intended to provide a relative measure of the extent of the problem for each pollutant in 1995. An individual living in a county may not actually be exposed to unhealthy air.

The number of people living in nonattainment areas as of August 1996 was approximately 127 million (based on the formal designations of nonattainment areas) as opposed to 80 million (based on those counties with air quality data that exceeded at least one

NAAQS in 1995). There are two reasons for this difference in population estimates. First, formal designations particularly for ozone may encompass entire metropolitan areas rather than just the county with the monitor. Second, formal designations are based on multiple years of data (rather than the most recent calendar year) to account for a broader range of meteorological conditions.

* * *

NOTES

1. Over the years, the Clean Air Act has employed a variety of measures aimed at ensuring that all areas of the country achieve primary standards expeditiously. The initial goal of the 1970 law was to bring about compliance by 1975. When that deadline passed without significant improvements in air quality Congress adopted more burdensome standards that provided strong incentives for attainment. Under the 1977 Amendments, nonattainment areas were required to make "reasonable further progress" (RFP) (originally defined to mean annual incremental reductions) toward achieving the NAAQS. In addition, states were required to implement all "reasonably available control measures" (RACM) and to mandate "reasonably available control technology" (RACT) on existing sources. § 172(c)(1). Major new sources in nonattainment areas were required to offset the new pollution with reductions from other sources. These measures, among others, were supposed to insure that the NAAQS were achieved no later than 1982, or in the case of CO and O₃, by 1987. Failure to achieve the Act's mandate was supposed to lead to a construction moratorium on major new sources. *See* 48 Fed. Reg. 3382 (1983) (*citing* former § 110(a)(2)(I)). In addition, federal highway grants in the offending region were to be suspended. § 176(a).

2. As the 1987 deadline approached it became clear that many areas would not achieve the Act's mandate. Congress initially responded by extending the deadline for the imposition of sanctions to August 31, 1988. 101 Stat. 1329-199 (1987). This date also passed without compliance. The 1990 Amendments further extended the deadlines for compliance with the NAAQS. The new provisions set more realistic goals for attaining compliance, while at the same time imposing strict new standards for nonattainment areas. Special new provisions for nonattainment areas are established under the law. Of these, the ozone provisions are the most detailed and complex, although significant new requirements for all other nonattainment areas are established as well. Section 181 of the Act divides ozone nonattainment areas into five categories depending on the severity of noncompliance. These areas are subjected to increasingly stringent standards to achieve compliance.

3. The special attention accorded ozone nonattainment areas is a direct reflection of the severity of the ozone problem. Set forth below is a summary of the Act's requirements for ozone nonattainment areas. §§ 181-185B. The special requirements which apply to other nonattainment areas are not described separately, and while those relating to CO and PM-10 follow the same general pattern as the O₃ provisions, they are much less detailed than the ozone provisions. *See* §§ 186-192.

1990 AMENDMENTS: OZONE NONATTAINMENT AREAS

[Editor's note: The NAAQS (primary and secondary) for ozone at the time of the 1990 Amendments was 0.12 ppm (hourly average/day). In 1997, the EPA added a new 0.08 ppm averaged over an eight hour period, but it remains to be seen how this new standard might impact the way in which SIPs must address ozone nonattainment areas. *See* 62 Fed. Reg. 38,856 (1997).]

MARGINAL AREAS (O₃ levels: 0.121-0.138 ppm)

- Achieve offsets of 1.1 to 1 for all new sources of VOCs. § 182(a)(4).
- Immediately after November 15, 1991, revise SIP to include a vehicle inspection and maintenance plan no less stringent than the plan outlined in H.R. Rep. No. 95-294.* § 182(a)(2)(B)(i).
- Inventory all NO_x and VOC sources and their emissions. § 182(a)(1).
- Revise SIP to meet EPA's RACT requirements (§ 182(a)(2)(A)), and comply with the Act permit standards for locating major new sources in ozone nonattainment areas. § 182(a)(2)(C).
- Attain primary standards by November 15, 1993.

MODERATE AREAS (O₃ levels: 0.138-0.160 ppm)

Meet all requirements for marginal areas (§ 182(b)) and—

- Define reasonable further progress to require VOC reductions of at least 15% by November 15, 1996 (beyond the 15% in the first six years). Smaller reduction allowed if certain conditions met.
- Revise SIP to achieve RACT for all VOC sources in accordance with any control techniques guidance (CTG) document issued by EPA. § 182(b)(2).
- Revise SIP to require most gas stations to install system for vapor recovery during fueling. § 182(b)(3)
- Achieve offsets of 1.15 to 1 for all new sources of VOCs. § 182(b)(5).
- Attain the primary standards by November 15, 1996.

SERIOUS AREAS (O₃ levels: 0.160-0.180 ppm)

Meet all requirements for moderate areas (§ 182(c)) and—

- Adopt and implement a program (following EPA's adoption of rules) to improve monitoring of ambient concentrations of ozone, VOCs and NO_x. § 182(c)(1).
- Redefine major stationary source for these areas to include sources which emit at least 50 tons per year of VOCs. § 182(c).
- Define reasonable further progress to require an average annual reduction of 3% per year (beyond the 15% in first six years) of VOC emissions beginning on November 15, 1996.
- Revise SIP to include an enhanced vehicle inspection and maintenance program by

* The referenced House Report is a report on the 1977 Amendments to the Clean Air Act. It requires, at a minimum, a vehicle inspection and maintenance program for most light duty vehicles at least as effective as a program that was operating in the State of New Jersey at the time of the 1977 Amendments. This would include an annual emissions test for all regulated vehicles and a prohibition on state licensing and registration for any nonconforming vehicle. H.R. Rep. No. 95-294, 95th Cong. 1st Sess. 289-291 (1977).

November 15, 1992 which meets the requirements of § 182(c)(3).

- Revise SIP to include a clean-fuel program (or other measures, if approved by EPA) by May 15, 1994 as required by § 182(c)(4).
- Beginning November 15, 1996, and every 3 years thereafter, demonstrate that the existing transportation parameters (mileage, emissions, congestion, etc.) are consistent with projections. (If not, revise SIP to achieve emissions as previously planned.)
- Existing sources emitting between 50 and 100 tons of VOCs which increase VOC emissions can avoid being treated as a modified source if the operator achieves an internal offset of VOC emissions of at least 1.3 to 1. If such sources elect not to achieve the 1.3 to 1 offset they are treated as modifications but they need only meet BACT instead of LAER. § 182(c)(7).
- Modifications of existing sources emitting more than 100 tons of VOCs can avoid LAER (but not the other provisions for major stationary sources in nonattainment areas) by achieving an internal offset of VOC emissions of at least 1.3 to 1. § 187(c)(10).
- The standard offset for any new or modified source in serious areas is 1.2 to 1. § 187(c)(10).
- Attain primary standards by November 15, 1996.

SEVERE AREAS (O₃ levels: 0.180-0.280 ppm)

Meet all requirements for serious areas (§ 182(d)) and—

- Redefine major stationary source in these areas to include sources of VOC emissions of 25 tons or more.
- Revise SIP by November 15, 1992 to include transportation control strategies and measures to offset any growth in emissions from growth in vehicle miles traveled and achieve the required reductions to show reasonable further progress.
- Revise SIP by November 15, 1992 to require employers to adopt programs to reduce employee travel. At a minimum, employers of 100 or more persons must increase the average passenger occupancy for peak period travel between home and work by at least 25% above the pre-existing average.
- The standard offset for any new or modified sources is 1.3 to 1 unless all existing major VOC sources are required to use BACT, in which case the offset is 1.2 to 1. § 182(a)(2).
- Achieve the primary ozone standards by November 15, 2005.

EXTREME AREAS (O₃ levels above 0.280 ppm) (Los Angeles)

Meet all requirements for severe areas (§ 182(e)) and—

- Redefine major stationary sources in these areas to include sources of VOC or NO_x emissions exceeding 10 tons per year. § 182(e).
- Extreme areas may not avail themselves of many of the substitute provisions available to less polluted areas. § 182(e).
- The standard offset for any new or modified source is 1.5 to 1 unless the SIP requires all existing major sources in the areas to use BACT, in which case it is 1.2 to 1. § 182(e)(1).
- Internal offsets of 1.3 to 1 at existing major sources will allow the source to avoid the permit requirements of § 173(a)(1) (major sources in NAAs) unless the offsets would have been achieved by compliance with other requirements of the SIP or Act. § 182(e)(2).
- Revise SIP to require existing utilities and industrial and commercial boiler to (1) burn natural gas, ethanol or methanol; or (2) use advanced control technology to reduce NO_x

emissions by November 15, 1998.

OZONE REDUCTION MILESTONES. § 182(g): By November 15, 1996, and every three years thereafter, each state with a serious, severe or extreme ozone NAA must determine whether the percentage reduction milestones have been met. If not, states with serious or severe areas must elect one of 3 remedies. Extreme areas must adopt an economic incentive program in accordance with § 182(g)(4). Moreover, if severe and extreme areas fail to meet their milestones, each major stationary source of VOCs must pay a penalty to the state for such failure. § 185(a).

A number of legal issues arose with respect to the rules promulgated by the EPA to guide SIP revisions necessary to comply with the standards established under the 1990 Amendments. The following case looks at some of those issues.

NATURAL RESOURCES DEFENSE COUNCIL, INC. v. EPA 22 F.3d 1125 (D.C. Cir. 1994)

PER CURIAM:

The petitioners seek review of decisions of the Environmental Protection Agency ("EPA") implementing the 1990 Amendments to the Clean Air Act ("CAA"), 42 U. S. C. §§ 7401 *et seq.* First, petitioner Natural Resources Defense Council, Inc. ("NRDC") challenges the EPA's policy of permitting conditional approval of committal state implementation plan ("SIP") submissions. In addition all petitioners challenge substantive agency decisions in the EPA's final rule on vehicle inspection and maintenance programs ("I/M"); the NRDC challenges the rule's effective and implementation dates for enhanced I/M, its geographic scope for both basic and enhanced I/M and several aspects of the performance standard adopted for I/M * * * We address the challenges separately.

I. CONDITIONAL APPROVAL OF SIPS

First, the NRDC challenges the EPA's use of a "conditional approval" procedure, under section 110(k)(4) of the 1990 Amendments, to permit states to comply with statutory SIP deadlines by submitting "committal" SIPs that contain no specific remedial measures but merely promise to adopt such measures within a year. The NRDC contends this procedure is contrary to congressional intent and has impermissibly postponed the statutory deadlines for the affected SIP submittals. To remedy the delay caused by the EPA's conditional approval procedure, the NRDC asks that we require prompt submission and review of all overdue SIPs and immediate imposition of statutory sanctions on states that have not submitted adequate SIPs as of July 15, 1994. While we hold that the EPA misconstrued and misapplied section 110(k)(4), we nevertheless conclude that equity and practicality require that we approve the extensions in part and that we adopt more moderate remedial measures, as set out below.

Since it was amended in 1970, the CAA has required states to adopt, after reasonable notice and public hearings and approval by the EPA, SIPs designed to attain and maintain "national ambient air quality standards" ("NAAQS"). See § 110. Not until 1990, however, did Congress establish specific deadlines for submitting SIPs and SIP revisions. As amended in 1990, the CAA now requires states encompassing "nonattainment" areas to submit particular SIPs or SIP revisions by fixed deadlines. Two of the deadlines are significant here:

(1) November 15, 1990, the date on which the Amendments took effect and “immediately after” which date states were required thereunder to submit “basic” I/M submissions, *see* § 182(a)(2)(B)(i), (b)(4), and (2) November 15, 1992, the date by which states were required to submit SIPs addressing enhanced I/M, *see id.* § 182(c)(3), and application of “reasonably available control technology” (“RACT”) to stationary emission sources of nitrogen oxides (“NO_x”), *see id.* § 182(b)(2), (f).

Under the 1990 Amendments, the “basic” I/M SIP submittals, due immediately after November 15, 1990 for all ozone nonattainment areas, from “marginal” to “extreme,” were to “include any provisions necessary to provide for a vehicle inspection and maintenance program of no less stringency than that of either the program defined in House Report No. 95-294, 95th Congress, 1st Session, 281-291 (1977) as interpreted in guidance of the Administrator issued pursuant to section 172(b)(1)(B) of this title (as in effect immediately before November 15, 1990) or the program already included in the plan, whichever is more stringent.” § 182(a)(2)(B)(i), (b)(4), (c), (d), (e).

The “enhanced” I/M submittals, due by November 15, 1992 for “serious,” “severe,” and “extreme” ozone nonattainment areas and for certain metropolitan areas in “Ozone Transport Regions,” *id.* § 182(c)(3)(A), (d), (e); § 184(b)(1)(A), were to “comply in all respects”⁶ with guidance published in the Federal Register” by the EPA “[w]ithin 12 months after November 15, 1990,” that is, by November 15, 1991, one year before the enhanced I/M SIP deadline. *Id.* (c)(3)(A)-(B), (a)(2)(B)(ii). That guidance was to include a “performance standard achievable by a program combining emission testing, including on-road emission testing, with inspection to detect tampering with emission control devices and misfueling for all light-duty vehicles and all light-duty trucks” and “program administration features necessary to reasonably assure that adequate management resources, tools, and practices are in place to attain and maintain the performance standard.” *Id.* § 182(c)(3)(B).

The NO_x RACT submittals, also due by November 15, 1992, but for “moderate” to “extreme” areas only, were to include “provisions to require the implementation of reasonably available control technology” for “major stationary sources” of NO_x emissions except for certain sources regarding which the EPA determines, at the time of SIP approval, that emission reductions will harm, or at least not improve, air quality. *Id.* § 182(b)(2), (f).

The 1990 CAA Amendments also established statutory teeth to enforce the new SIP deadlines. Initially, section 110(k)(1)(B) requires the EPA to make a finding that the submittal is complete or incomplete within 2 months of submission or 6 months of the submission

⁵ The EPA Administrator is authorized “on the Administrator’s own motion or by petition from the Governor of any State” to create additional Ozone Transport Regions “[w]henver the Administrator has reason to believe that the interstate transport of air pollutants from one or more States contributes significantly to a violation of a national ambient air quality standard in one or more States” or to add or remove a state (or portion thereof) from an Ozone Transport Region. § 176A. Congress expressly established one Ozone Transport Region that includes “the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the Consolidated Metropolitan Statistical Area that includes the District of Columbia.” *Id.* § 184(a).

⁶ If the EPA fails to make any determination at all within 6 months of submission, the submittal is deemed complete by operation of law. § 110(k)(1)(B).

deadline. If the EPA determines a submittal is incomplete, it is deemed not to have been made. *Id.* § 110(k)(1)(C). If the EPA finds the submittal complete, the agency has 12 months to approve, disapprove (in part or whole) or conditionally approve the submittal. *Id.* § 110(k)(2)-(4).⁸ At any time after the EPA makes a whole or partial disapproval or an incompleteness finding, it “may apply” the two sanctions set out in § 179(b), namely, withholding approval of highway projects and grants and imposing stricter permit requirements for new emission sources. *Id.* § 110(m). If a state fails to correct a deficiency within 18 months after a disapproval or finding of failure to submit, the EPA is required to impose one of the statutory sanctions. § 179(a). Further, unless a complete SIP is approved within 2 years after such disapproval or finding, the state will be subject to an EPA-promulgated Federal Implementation Plan. § 110(c)(1).

Although the statutory scheme set out above provides the EPA with clear submission and sanction schedules, the agency nevertheless strayed from Congress’ directions in two relevant respects. First, the EPA waited until November 5, 1992 to publish the enhanced I/M guidance required under the Amendments to be provided no later than November 15, 1991. Second, in part to compensate for its dilatory promulgation of that guidance, the EPA decided to invoke the CAA conditional approval provision to afford states additional time, beyond the statutory submission deadlines, to develop and submit some of the required SIPs, notably here, those relating to I/M and NO_x RACT.

The EPA first indicated its intent to permit conditional approval of the I/M submittals, both basic and enhanced, in its April 16, 1992 “General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990” (“General Preamble”), 57 Fed. Reg. 13,498 (April 16, 1992). *See* 57 Fed. Reg. at 13,514 (“The EPA will use its authority under the new section 110(k)(4) to conditionally approve basic I/M programs in the case of moderate ozone areas that were newly subject to this requirement at the time of enactment, based upon the State’s commitment to develop such a program within 1 year from conditional plan approval, or by the date established EPA’s guidance [sic], whichever is sooner.”); *id.* at 13,519 (“In the event that EPA’s enhanced I/M performance standard is not finalized soon enough to provide sufficient time for full SIP development, EPA will use its authority under section 110(k)(4) to conditionally approve SIP submittals committing to adopt enforceable enhanced I/M programs consistent with EPA’s guidance.”); *cf. id.* at 13,523 (announcing intent to conditionally approve transportation control SIPs). The EPA later confirmed its intent to conditionally approve the I/M, as well as other, submittals in a memorandum to regional EPA directors dated July 22, 1992 (“Shapiro Memorandum”) and in an August 26, 1992 letter to the NRDC (“Rosenberg Letter”). Subsequently, in a final rule on “Inspection/Maintenance Program Requirements,” 57 Fed. Reg. 52,950, 52,970-71, (Nov. 5, 1992), the EPA codified the conditional approval policy for enhanced I/M submissions. *See also* 40 C. F. R. § 51.372(b). Finally, in a “Nitrogen Oxides Supplement to the General Preamble” (“NO_x Supplement”), 57 Fed. Reg. 55,620, 55,622-23 (Nov. 25, 1992), the EPA authorized conditional approval of the NO_x RACT submittals required under § 182(b)(2) and (f). The NRDC filed three petitions challenging the EPA’s conditional approval policy as set out in the Shapiro Memorandum and the Rosenberg Letter and as specifically applied in the NO_x Supplement and the I/M Rule. Before we address the NRDC’s challenge to that policy,

⁸ If the EPA fails to make any determination at all within 6 months of submission, the submittal is deemed complete by operation of law. § 110(k)(1)(B).

however, we must first consider whether three of the cited decisions are final and ripe for review.

A. Finality and Ripeness

The EPA asserts that this court is without jurisdiction to review the decisions in the Shapiro Memorandum, the Rosenberg Letter, and the NO_x Supplement because they do not constitute final agency action or, alternatively, because they are not ripe for review. We disagree and hold that all three documents, insofar as they authorize conditional approval of “committal” submissions, appear to be both final and ripe.

* * *

B. Committal SIP Policy

Next, we address the merits of the EPA’s construction of the conditional approval provision. We review the agency’s construction of the provision under the framework set forth in *Chevron USA, Inc. v. NRDC*, 467 U.S. 837 (1984). *NRDC v. Reilly*, 976 F.2d 36, 40-41 (D.C.Cir. 1992). Given the express language of section 110(k)(4), the CAA’s general SIP approval scheme and the legislative history, we conclude the EPA’s construction of the conditional approval provision is contrary to Congress’s unambiguous intent and must therefore be rejected

Section 110(k)(4) provides:

(4) *Conditional approval.* The Administrator may approve a plan revision based on a commitment of the State to adopt specific enforceable measures by a date certain, but not later than 1 year after the date of approval of the plan revision. Any such conditional approval shall be treated as a disapproval if the State fails to comply with such commitment.

§ 110(k)(4). The EPA has construed this provision to authorize conditional approval of a committal SIP that contains no specific substantive measures so long as it is submitted by one of the statutory deadlines and includes (1) a promise to adopt specific enforceable measures within a year and (2) a schedule of “interim milestones” in this future adoption process. See, e.g., 40 C.F.R. § 51.372(b)(1) (“States shall submit a SIP revision by November 15, 1992, which includes the schedule required in paragraph (a)(1) of this section¹⁰ and a formal commitment from the Governor to the adoption and implementation of an I/M program meeting all requirements of this subpart.”). We believe the EPA’s position reflects a strained construction of the statutory language. On its face, that language seems to authorize conditional approval of a substantive SIP or SIP revision which, although not approvable in its present form, can be made so by adopting specific EPA-required changes within the prescribed conditional period.

The statutory scheme confirms our interpretation of the statutory language. As already noted, the 1990 Amendments require that the EPA determine the completeness of each submission, that is, whether it contains “the information necessary to enable the Administrator

¹⁰ The scheduled “interim milestones” must include” (i) Passage of enabling statutory or other legal authority; (ii) Proposal of draft regulations and promulgation of final regulations; (iii) Issuance of final specifications and procedures; (iv) Issuance of final Request for Proposals (if applicable); (v) Licensing or certifications of stations and inspectors; (iv) The date mandatory testing will begin for each model year to be covered by the program; (vii) The date full-stringency cutpoints will take effect; (viii) All other relevant dates; . . . 40 C.F.R. § 51.372(a)(1)(1998).

to determine whether the plan submission complies with the provisions of [the CAA],” “[w]ithin 60 days of the Administrator’s receipt of a plan or plan revision, but no later than 6 months after the date, if any, by which a State is required to submit the plan or revision.” §110(k)(1). Such a determination cannot reasonably be made unless the conditionally approved submittal contains something more than a mere promise to take appropriate but unidentified measures in the future. In addition, the statute appears to require that the conditional approval decision, like any approval or disapproval determination, be made within 12 months after the completeness finding, *see* § 110(k)(2), (3), (4), which, as we noted, must follow the submission. In short, the CAA contemplates the following schedule: (1) submission of a SIP, (2) followed by a finding, within two to 6 months, that the SIP is complete, and (3) approval (whether absolute, partial, or conditional) or disapproval within 12 months thereafter. To permit conditional approval at the time of initial submission, without any completeness determination or substantive review, would turn the statutory timetable on its head.

Finally, our construction of section 110(k)(4) is bolstered by the House Report on the 1990 Amendments, which explains that “[s]ection 110(k)(4) authorizes conditional approval of a SIP where the State commits to adopt such specific enforceable *additional* measures as EPA requires within one additional year.” H.R. Rep. No. 490, 101st Cong., 2d Sess., pt 1 at 220 (1990) (emphasis added).

For the preceding reasons, we conclude that the conditional approval mechanism was intended to provide the EPA with an alternative to disapproving substantive, but not entirely satisfactory, SIPs submitted by the statutory deadlines and not, as the EPA has used it, a means of circumventing those deadlines. Accordingly, we hold that section 110(k)(4) does not authorize the EPA to use committal SIPs to postpone SIP deadlines. We must nevertheless decide whether the one-year extensions of the I/M and NO_x RACT submission deadlines, which the SIP’s conditional approval policy effected, can be sustained on some other basis. We conclude that the extension of the enhanced I/M and the NO_x RACT deadlines can be upheld as necessary and appropriate under the particular circumstances here but that the basic I/M extension was entirely unjustified.

In the case of enhanced I/M SIPs, the EPA made its own procrustean bed. Under the 1990 CAA amendments, Congress contemplated that states be given a one-year period after guidance promulgation to bring their SIPs into compliance with the enhanced I/M performance standard. The agency’s failure to meet its November 15, 1991 deadline, however, made it impossible for states both to have the benefit of this lead time and to meet their November 15, 1992 enhanced I/M submission deadline. While the CAA is very specific about the consequences of a state’s failure to meet the submittal deadline, the Act is silent on what should occur if the agency misses its guidance deadline. Under such circumstances, we must attempt to discern on our own what Congress would have intended. *See Linemaster Switch Corp. v. EPA*, 938 F.2d 1299, 1302-05 (D.C. Cir. 1991). In undertaking this inquiry, we owe no deference to the agency’s view of congressional intent. As we observed in *Linemaster*, “it would indeed be odd to conclude that Congress implicitly entrusted a laggard agency with the authority to devise a remedy for its own untimeliness.” *Id.* at 1303. Instead we give considerable weight to the statute itself as Congress generally mean what it says when imposing an explicit deadline. Judicial extension of its deadline is an extraordinary remedy not to be imposed as a matter of course. There are nonetheless circumstance in which an extension’s warranted. Such is the case, for example, if Congress would have intended that the deadline be extended to provide a party the full statutory time for acting on a agency

guidance.

In *NRDC v. Thomas*, 805 F.2d 410 (D.C. Cir. 1986), we held that the EPA was required to postpone for one year the statutory deadline for automobile manufacturer compliance with EPA promulgated NO_x emission standards because Congress had expressly contemplated that manufacturers have four years to bring their vehicles into compliance and the EPA's tardy promulgation of the standards gave them only three years. The *Thomas* court explained: "Although fully cognizant of the frustration the drafters would have felt, could they have foreseen the course of events, we nonetheless find that they enacted a four year lead-time requirement and we have no alternative but to enforce it, unless or until Congress decrees otherwise." *Id.* at 435. We are under the same compulsion here.

Congress' carefully crafted statutory scheme provided the states a full year after the EPA guidance to develop and submit their enhanced I/M SIPs. Because the fundamental statutory requirement for those SIPs is that they "comply in all respects" with the EPA guidance, §182(c)(3)(B), we can only infer that Congress believed a full year was necessary to complete complying SIPs. The inference is reinforced by the complexity of the performance standard that Congress envisioned, *see id.* § 182(c)(3)(B)-(C), and that the EPA ultimately promulgated in its final I/M rule.

The EPA extended the NO_x RACT submission deadline because of a slightly different timing problem. Section 182(f)(1) of the 1990 Amendments exempts from it NO_x reduction requirements NO_x sources for which "the Administrator determines (when the Administrator approves a plan or plan revision) that net air quality benefits are greater in the absence of reductions of oxides of nitrogen from the sources concerned," "that additional reductions of oxides of nitrogen would not contribute to attainment of the national ambient air quality standard for zone in the area," or "that additional reductions of oxides of nitrogen would not produce net ozone air quality benefits in such regions." § 182(f)(1). The EPA determined in the NO_x Supplement, however, that "as a technical matter, photochemical grid modeling is the only reliable tool to justify an area wide exemption from the NO_x requirements (or relaxation of otherwise required NO_x reductions)" and that "for a variety of ozone nonattainment areas, . . . photochemical grid modeling either has not been utilized previously or, if utilized, has not adequately considered the effects of NO_x emissions reductions." The EPA therefore concluded that "the time needed to establish and implement a modeling protocol and to interpret the model results will, in a variety of cases, extend beyond the November 15, 1993 deadline for submission of NO_x rules;" 57 Fed. Reg. at 55,623. Accordingly, the EPA granted a narrow one-year extension for NO_x RACT submissions "limited to instances where the State documents that (1) credible photochemical grid modeling is not available or did not consider the effects of NO_x reductions and (2) the State submits progress reports on the modeling showing the program is on schedule while the committal SIP is being reviewed by EPA." *Id.*

The CAA expressly gives the EPA 14-18 months after the submittal deadline to approve or disapprove the SIP and at the same time to determine whether a state qualifies for one of the section 182(f)(1) exemptions. Because only a single NO_x RACT submissions is required under the statute, it is logical to infer that Congress intended data supporting exemptions to be included in that submittal and that the EPA have the full 14-18 months to review them and to make an exemption determination. If the EPA is correct about the grid modeling problem, however, that period would be considerably reduced in some cases. We believe, consistent with our conclusion on enhanced I/M submission lead time and the decision in *Thomas*, that had Congress foreseen the exemption timing problem, a matter outside the EPA's control, it would have elected to accord the EPA the full statutory review time.

Finally, we agree with the NRDC that the extension for basic I/M submittals was impermissible. The 1990 Amendments expressly direct that a basic I/M SIP be submitted "immediately after November 15, 1990" and require only that it comply with the provisions of the state's previous SIP or with EPA guidance "as in effect immediately before November 15, 1990." § 182(a)(2)(B)(i), (b)(4). Given the clear statutory submission deadline, which is in no way dependent on promulgation of additional EPA guidance, we see no justification for granting extensions for basic I/M submittals.

Having concluded that the EPA properly extended the statutory enhanced I/M and NO_x RACT deadlines, but not the basic I/M deadline, we must now consider what if any remedial measures to adopt. The NRDC asks that we take a strict approach and require the EPA to make immediate findings of noncompliance for all states that failed to meet the statutory deadlines, to approve or disapprove the submissions it has received within 120-180 days, and immediately thereafter to impose the statutory sanctions on those states that have not submitted fully approved SIPs. We believe the circumstances call for a less drastic remedy.

First, because the EPA, by ignoring the statutory deadline for promulgating guidance, was responsible for the tardy submission of enhanced I/M SIPs, we conclude that the EPA should be required to compensate for the delays it caused by accelerating its review of those submittals¹³ It is for this reason that we have already ordered the EPA to propose either approval or disapproval of SIPs it has received no later than July 15, 1994 and to finally approve or disapprove them no later than September 15, 1994. On the other hand, we think it would be unfair to penalize states that reasonably relied on and complied with the EPA's extended deadlines by similarly accelerating the statutory sanction scheme. Accordingly, we direct that the sanction clock for I/M SIPs start, if necessary, from the time of SIP disapproval in accordance with the statutory scheme.

As for the NO_x RACT SIPs, we find it undesirable to shorten the SIP review time for two reasons. First, the reason for extending the NO_x RACT deadline was outside the EPA's controls. As we explained above, some states simply needed more time for further grid modeling. Second, and more importantly, it is likely that the EPA will require the full statutory review period to make the necessary individual determinations whether each state granted a NO_x RACT extension qualifies for any of the section 182(f)(1) exemptions. Accordingly, we leave intact the NO_x RACT timetable, under which the EPA must approve or disapprove submittals it has received no later than May 15, 1995.

In summary, we hold that (1) the EPA's use of "committal" SIPs to extend the statutory submission deadlines without statutory authority, (2) under the circumstances here the enhanced I/M and the NO_x RACT deadlines were properly extended to further the CAA's purposes, (3) July 15, 1994 should be treated as the deadline for EPA approval or disapproval of basic and enhanced I/M submittals, with the statutory sanction clock running from that time,

¹³ Under the statutory scheme, the EPA has 14 to 18 months after the submittal deadline (i.e., 12 months from the completeness finding made 2 to 6 months after the deadline). Were this schedule applied to the EPA's extended November 15, 1993 deadlines, the EPA would have until sometime in 1995 to approve or disapprove enhanced I/M submittals. The time for reviewing the initial basic I/M SIPs, originally due immediately after November 15, 1990 but extended to November 15, 1991 under the EPA's conditional approval policy, expired in 1993. The statute provides no deadline for reviewing revisions to basic I/M SIPs that may be required as a result of the EPA's statutorily mandated guidance, *see supra* note 12, but assuming a comparable schedule, approval or disapproval would be required at the same time as for enhanced I/M submittal.

and (4) the statutory period for reviewing NO_x RACT submittals should commence as of the extended deadline of November 15, 1993, with the approval and sanction timetables to run from that time according to the statutory scheme.

II. THE NRDC'S OTHER CHALLENGES

A. Take Effect Deadline

The NRDC contends that the EPA's enhanced I/M rule impermissibly extends the November 15, 1992 statutory deadline on which enhanced I/M programs for serious, severe, or extreme ozone nonattainment areas must "take effect." See 57 Fed. Reg. at 53,003 (*codified at* 40 C. F. R. § 51.373). Section 182(c)(3)(B) of the 1990 Amendments, mandates not only that states submit implementation plans for enhanced I/M programs by November 15, 1992, but also that the enhanced programs "take effect" on that date. Equating "take effect" with "be fully implemented," the NRDC asks us to invalidate the provision of EPA's final rule for full implementation of enhanced I/M programs by 1996. Because we think it clear that, contrary to the NRDC's argument, "take effect no later than 2 years from November 15, 1990" does not mean "be fully implemented" by that date, we reject the NRDC's contention and so deny the petition in this respect.

The crux of the parties disagreement is the meaning to ascribe to the words "take effect." The NRDC argues that this question can be resolved as a matter of plain meaning under the first step of the Supreme Court's now-familiar *Chevron* analysis. See *Chevron U.S.A. Inc. v. NRDC*, 467 U.S. 837 (1984). According to the NRDC, "a Clean Air Act program take[s] effect when it cleans the air to the degree required in the underlying regulation." The EPA, for its part, notes that the statute nowhere defines "take effect," and maintains that the interpretation of "take effect" lies soundly within the realm of EPA discretion under the second step of *Chevron*. In the preamble to its final rule, the EPA concluded that the "take effect" requirement is satisfied when a state makes its enhanced I/M program effective as a matter of law by adopting all necessary statutory and regulatory authority. See 57 Fed. Reg. at 52,971. The EPA further argues that its schedule for full implementation of enhanced I/M programs, which allows two to three years after the programs become legally operative, is in fact quite abbreviated given the substantial challenge of constructing stations and implementing new high-technology testing.

Chevron instructs that "[f]irst, always, is the question whether Congress has directly spoken to the precise question at issue." 467 U.S. at 842. The NRDC maintains that the words "take effect" reflect a deliberate congressional decision to embrace an early implementation date. "Take effect," the NRDC argues, means "produce action and results," that is, achieve the Clean Air Act's underlying goals. We, however, find the meaning of "take effect" to be significantly less plain than the NRDC suggests. "Effectiveness" language is frequently used by Congress to connote legal effectiveness, not results. Thus, the CAA Amendments themselves provide that "the amendments made by the Act . . . shall be *effective* on the date of enactment of the Act." Pub.L.No. 101-549, Title VII, 711(b), 104 Stat. 2684 (1990) (emphasis added). Even the NRDC would likely concede that this language does not require implementation of all standards, construction of all machinery, and improvement of the air by November 15, 1990, the date on which the Amendments became law. Similarly, we noted in *Public Citizen v. U.S. Trade Representative*, 5 F.3d 549 (D.C. Cir. 1993), *cert. denied*, ___ U.S. ___, 114 S.Ct. 685, (1994), that, "[i]f approved by Congress, NAFTA is scheduled to *take effect* on January 1, 1994." *Id.* at 550 (emphasis added). Obviously neither we nor Congress

itself contemplated that the benefits inhering in a fully implemented NAFTA would accrue on that date. “Take effect” is a phrase whose meaning varies considerably with context.

Because the phrase “take effect” is itself ambiguous, its meaning must be discerned according to *Chevron*’s second step. Thus, “the question for the court is whether the agency’s answer is based on a permissible construction of the statute.” 467 U.S. at 843. We find the EPA’s conclusion that the “take effect” language requires only legal effectiveness entirely reasonable in light of the statutory scheme. First and foremost, it strains credulity to assert that Congress expected states simultaneously to undertake the legal legwork necessary to implement a wholly new enhanced I/M program and to begin, much less complete, the task of getting such a program up and running within a year of promulgation of the EPA’s guidance. The Act confers tremendous flexibility on state legislatures and regulators to decide how best to attain the performance standards promulgated by the EPA. In view of this breadth of state latitude, state authorities simply cannot guess prior to state legislative or administrative actions what form the program will ultimately take or how to prepare for its instantaneous implementation. And it is also unreasonable to assume that Congress expected states to undertake legislative or administrative action within a few weeks or even months in order to devote the balance of the year to implementation. The Senate Report accompanying the 1990 Amendments states the “[e]xperience since passage of the Clean Air Amendments of 1970 has shown that nine months is not adequate time for States to prepare and submit implementation plans for new or revised air quality standards.” S. Rep. No. 101-228, 101st Cong., 2d Sess. 20.

The NRDC suggests that, under the EPA’s interpretation, the “take effect” provision is superfluous in light of § 110(a)(2), which already provides that SIPs must include “enforceable” emission reduction programs by the same date, November 15, 1992. We do not find this argument particularly compelling. There might well be a distinction between an “enforceable” program and one that has already taken legal effect. The word “enforceable” is susceptible of various connotations, and could reasonably be read to require only that relevant regulatory machinery, including a viable enforcement apparatus, be promulgated, rather than that the legal machinery be currently in effect or that implementation be underway. The “take effect” provision, as constructed by the EPA, ensures that the state programs are legally effective pending the EPA’s approval of SIPs, a process that could take over a year, and so cannot be considered superfluous. We perceive no want of logic in a construction of the statute that recognizes three distinct steps to compliance: the point at which a program is promulgated, the point at which it takes legal effect, and the point at which it is fully implemented. We note that in other sections of the Amendments, Congress itself appears to recognize this distinction between promulgating a standard—putting all the machinery in place—and making it legally effective. See § 112(q)(1) (“any standard under this section which has been *promulgated*, but has not *taken effect* . . . shall not be affected by [this act]”) (emphasis added); § 112(q)(4) (“no standard *promulgated* under this section . . . shall *take effect* for two years following November 15, 1990”) (emphasis added). In sum, we find the EPA’s interpretation of “take effect” reasonable and worthy of *Chevron* deference.

B. Selection of Implementation Deadlines

Although we reject the NRDC’s argument that the “take effect” language requires revocation of the EPA’s implementation schedule, we nonetheless must address the NRDC’s separate charge that the EPA’s selection of implementation dates is arbitrary and capricious. The NRDC contends that the EPA’s implementation dates are inconsistent with the statutory scheme, because the final rule does not require that I/M programs be fully effective by the

dates for meeting final and interim air pollution reduction targets. Section § 181(a)(1) of the Amendments set primary standard attainment dates for marginal to extreme ozone nonattainment areas. Marginal areas must attain the primary ozone standard no later than November 15, 1993. § 181(a)(1). Serious areas, for which enhanced I/M programs are necessary, are required to attain the primary standard no later than November 15, 1999. *Id.*

We perceive no inconsistency between the dates for primary standard attainment and the EPA's implementation schedule for I/M programs, and so reject the NRDC's argument. With respect to enhanced I/M programs, we note that the 1999 attainment date for serious areas occurs after, not before, full implementation of enhanced I/M in these regions. With respect to basic I/M program, although the EPA's implementation date of mid-1994 might at first glance seem counterintuitive, given the requirement that marginal areas conform to the attainment standard by November 15, 1993, this inconsistency is by no means fatal to the EPA's implementation schedule. The statute provides for multiple methods of reducing emissions, and states may cut emissions elsewhere to meet the primary standard. Moreover, I/M programs are only required in marginal areas to the extent that they were required prior to the 1990 CAA Amendments. *See* § 182(a)(2)(B). Thus, a state may employ its existing apparatus toward attaining the primary standard, and the implementation schedule may have less relevance with respect to basic I/M programs in these regions. Finding no defect, we move on.

C. Geographic Scope of I/M Programs

1. Ozone Transport Regions

The NRDC next contends that the EPA's final rule impermissibly narrows the scope of enhanced I/M programs in the northeastern ozone transport region by exempting largely rural areas from the statute's requirements. The Amendments designate an ozone transport region, comprised of eleven northeastern states and the District of Columbia, in which special emissions rules apply regardless of ambient air quality. The statute requires that "each area in such State that is in an ozone transport region, and that is a metropolitan statistical area or part thereof with a population of 100,000 or more comply with the provisions of section § 182(c)(3) . . . (pertaining to enhanced [I/M] programs)." [§ 184 (b)(1)(A)].* Section § 182(c)(3), in turn, sets out requirements for enhanced I/M programs in serious areas, which are to be implemented "in each urbanized area [of a Metropolitan Statistical Area] . . . with a 1980 population of 200,000 or more." Incorporating the cross-referenced section's urban limitation, the EPA's I/M rule for ozone transport regions exempts "largely rural counties." *See* 57 Fed. Reg. at 52,966. This, the NRDC argues, the EPA is not free to do in the face of the clear language of the statute.

The EPA counters that it is unclear whether Congress intended the ozone transport region provision to incorporate the urban limitations of the provision it references. The agency concedes that Congress sought to require enhanced I/M programs in the ozone transport region for areas with lower population than in the cross-referenced provision. Hence, the 100,000-person, rather than 200,000-person, threshold. However, the EPA argues that the very existence of a threshold signifies congressional recognition both of the difficulty of implementing the high-technology enhanced I/M programs in sparsely populated regions and of the trivial emissions reductions such implementation confers. The EPA maintains that its

* Ed. Note: The court erroneously cites § 182(c)(3) instead of § 184(b)(1)(A).

exemption—for counties with fewer than 200 persons per square mile—represents a reasonable interpretation of the statute.

Predictably, the parties' battle is again drawn on *Chevron* lines, the NRDC claiming the statute clearly resolves the issue (step one), and the EPA proclaiming the statute's ambiguity (step two). Perhaps because the statutory provision is so opaque, each side points to legislative history to shore up its defenses. The NRDC observes that Congress rejected a Senate measure that would have permitted the EPA to exempt areas in the transport region from I/M requirements if they did not "contribute" to the nonattainment problem. *See* 136 CONG. REC. S4363, S4377 (daily ed. Apr. 18, 1990). Accordingly, the NRDC maintains, Congress expressly rejected the idea that sparsely populated regions should escape enhanced I/M requirements. The EPA rejoins that when the House deleted that exemption authority, it also explicitly narrowed the scope of enhanced I/M in § 182 (c)(3) the cross-referenced provision, to urbanized areas of 200,000 or more, rejecting a Senate approach that would have expressly required the provision to apply to all vehicles in the covered area. Accordingly, the EPA argues, although Congress eliminated broad exemption authority in the transport region provisions, it simultaneously exempted all rural areas from enhanced I/M in the transport region through § 182(c)(3). We believe that the legislative history battle ends in a draw, leaving intact the question whether Congress intended to incorporate the urban limitation into its ozone transport region provision.

Because it is not clear from the statute or its legislative history whether Congress sought to incorporate the urban limitation by reference, this question is best resolved under *Chevron* step two. In such cloudy circumstances, "it is enough that the Agency's construction is reasonable." *Ohio v. EPA*, 997 F.2d 1520, 1527 (D.C. Cir.1993). Moreover, "EPA need not establish that the statute *compels* its regulation." *Id.* (emphasis in original). Pursuant to this lenient standard, we find it clear enough that the agency's interpretation merits our deference. As the EPA observes, in serious, severe, and extreme nonattainment regions, Congress determined that enhanced I/M programs would be limited to urbanized areas. Despite the fact that these regions are the most polluted in the nation, Congress made a policy choice not to require enhanced I/M programs in their sparsely populated areas. It is neither illogical nor unreasonable for the EPA to conclude, in light of the urban limitation for these heavily polluted regions, that the high-technology enhanced I/M programs are similarly unwarranted in rural areas within the ozone transport region.

2. Basic I/M Programs

The NRDC also challenges the EPA's requirement that *basic* I/M programs extend only to "urbanized" portions of moderate and higher nonattainment areas. *See* 57 Fed. Reg. at 52,987 (codified at 40 C.F.R. § 51.350(a)(4)). The CAA Amendments provide that "[e]ach State in which all or part of a Moderate Area is located" must submit a state implementation plan including a basic I/M program "[f]or all Moderate Areas." § 182(b)(4). Since the plain language of this provision makes no exception for rural regions within moderate areas, the NRDC contends that the EPA is powerless to create one. The NRDC notes, in this regard, that Congress expressly created a rural exception for *enhanced* I/M programs in the statute. *See* § 182(c)(3)(A). When Congress wanted to limit I/M programs, the NRDC argues, it did so explicitly. Moreover, the NRDC contends that the provision requiring state implementation plans for all moderate areas "without regard to whether or not the area was required by [the previous Act] to have included a specific schedule for implementation," § 182(b)(4), expressly disavows the agency's prior practice of exempting rural regions within nonattainment areas from I/M requirements. Although the NRDC's arguments are not insubstantial, we find

ourselves ultimately unpersuaded.

In contrast to the NRDC, we find the operative statutory language equivocal and the legislative history unavailing. The statutory requirement that states submit implementation plans including basic I/M programs “[f]or all Moderate Areas” does not, in itself, mandate basic I/M throughout every square mile of moderate regions; it simply directs that each moderate area be covered by an implementation plan. Similarly, the requirement that states submit implementation plans for those moderate areas not covered in the previous statute does not by its terms affect the scope of I/M programs within those areas. Section 182(b)(4), which covers moderate areas, requires a basic I/M program “as described in subsection (a)(2)(B) of this section. “Section 182(a)(2)(B), in turn, requires a basic I/M program “of no less stringency than . . . the program defined in [the prior Act] as interpreted in the guidance of the Administrator.” The prior EPA guidance required basic I/M only in urbanized areas within nonattainment areas. *See* 57 Fed. Reg. at 52,965-66. The question therefore pivots on the scope of the word “stringency.” The NRDC contends that “stringency” refers to the substantive rigor of the program, not to its geographic scope. The EPA, in predictable contrast, maintains that “stringency” refers not only to testing standards, but also to the number of vehicles tested. We find the statutory language insufficiently precise to command either interpretation beyond doubt.

Admittedly, the NRDC makes a plausible point when it urges that Congress’ creation of an *express* rural exclusion for enhanced I/M programs makes it less likely that Congress implicitly intended to maintain or desired to construct a rural exclusion with respect to basic I/M programs. *See Hercules Inc. v. EPA*, 938 F.2d 276, 280-81 (D.C. Cir. 1991) (pertaining to CERCLA). Congress knew how to limit programs, the argument runs, and when it did not do so, such programs are perforce unlimited. However, in the context of this particular statute, in which Congress repeatedly cross-references internal sections, refers to provisions of the previous Act, and alludes to EPA guidances, we are not confident that the conventional inference trumps in all cases. The express creation of a rural exclusion for enhanced programs, which were newly-created by the 1990 Amendments, does not, in our view, compel the conclusion that Congress sought silently to alter any preexisting exclusions for basic I/M programs, particularly when Congress explicitly incorporated the preexisting guidance by reference.

Resolution of this particular dispute, therefore, again takes us to *Chevron’s* second step, under which we defer to reasonable agency constructions of the “stringency” provision. Pursuant to this standard, we have no trouble deeming the EPA’s interpretation a permissible view of the statute. Obviously, Congress can be presumed to have had knowledge of the contents of the prior EPA guidance whose standards it explicitly incorporated; *Dart v. United States*, 848 F.2d 217, 229 (D.C. Cir.1988); *National Soft Drink Ass’n v. Block*, 721 F.2d 1348 (D.C. Cir.1983). Because the prior guidance excluded rural areas from basic I/M requirements, and because the “stringency” of a program may easily encompass its breadth, we have no cause to doubt the plausibility of the EPA’s formulation, which we now uphold.

D. The EPA’s Performance Standard

The NRDC next contends that the EPA employed unduly lenient testing methods in order to dilute the enhanced I/M performance standard it was required to promulgate under §182(c)(3)(B)(i), and that this weak performance standard, in turn, was used to justify a shift away from the statutory presumption of annual testing to a presumption of cheaper, biennial

testing.²² To water down the performance standard, according to the NRDC, the EPA exempted older automobiles from “high-tech” emissions tests, visual inspections to detect tampering, and evaporative system checks. *See* 57 Fed. Reg. at 52,956-57. The NRDC contends that the EPA conceded the sizable benefits of subjecting older-model vehicles to these tests when it recommended that such testing comprise part of a *biennial* program as a feature that “exceed[s] the requirements” of the statute. Because the EPA’s annual performance standard achieves smaller reductions than are technically feasible, the NRDC assails it as a violation of the statute. The NRDC also maintains that the EPA failed adequately to explain its decision not to promulgate a more stringent standard.

The EPA responds that it set a performance standard that provided states with “continued reasonable flexibility to fashion effective, reasonable, and fair programs,” as required by §182(a)(2)(B)(ii) of the Amendments. The EPA argues that the statute cannot be read to require that it set the most austere performance standard possible, for otherwise there would be no way in which states could develop biennial programs with features exceeding the minimum requirements for annual programs or reductions that exceed those obtainable through annual inspections. *See* § 182(c)(3)(C)(v). The EPA maintains that the statute allowed it discretion in setting performance standards. As to the particular testing decisions, the EPA argues that it reasonably concluded that the marginal cost of high-technology IM-240 testing for pre-1986 models far exceeded the marginal benefits in reduction. Moreover, although the statute requires that the EPA set “a performance standard achievable by a program combining emission testing, including on-road emission testing, with inspection to detect tampering with emission control devices and misfueling for *all* light-duty vehicles,” § 182(c)(3)(B)(i) (emphasis added), the EPA argues that the statute does not require that all vehicles be subjected both to emission testing and visual inspection. Accordingly, the EPA argues, it was free to exempt older models from visual inspection to detect tampering.

Each of the parties wins some and loses some on this issue. First of all, we think it clear that the statute does not mandate that the EPA set the most stringent possible annual performance standard. With its repeated emphasis on state flexibility, echoed in the legislative history, *see* S. REP. No. 101-228, 101st Cong., 2d Sess. 39, *reprinted in* 1990 U.S.C.C.A.N. 3425, the statute appears to place a premium on state ability to shuffle aspects of the program to meet the EPA’s requirements and individual state needs. Moreover, the Act does seem to contemplate that the addition of extra features might enable biennial programs to “equal or exceed the reductions which can be obtained through . . . annual programs.” § 182(c)(3)(C)(v) (emphasis added). Implicitly, at least, Congress thus appears to have contemplated considerable EPA discretion in standard-setting.

However, Congress clearly did not intend that such discretion be boundless. In §182(c)(3)(B)(i), after instructing the EPA Administrator to promulgate a guidance setting forth the enhanced I/M performance standard, Congress clarifies that the standard must be “achievable by a program combining emission testing, including on-road emission testing, with inspection to detect tampering with emission control devices and misfueling for all

²² The statute provides that enhanced programs “shall include, at a minimum, . . . Annual emission testing and necessary adjustment, repair, and maintenance, unless the State demonstrates to the satisfaction of the Administrator that a biennial inspection, in combination with the features of the program which exceed the requirements of this chapter, will result in emissions which equal or exceed the reduction which can be obtained through such annual inspections.” § 182(c)(3)(C)(v).

light-duty vehicles and all light-duty trucks.” The EPA contends that this provision simply specifies the ingredients of the program; it does not mandate that all the tests listed be performed on all covered vehicles. To support this proposition, the EPA cites to a statement in the House Report that “[o]n-road emission [testing] may not be practical . . . for every vehicle, and is not required. However, it should play some role in the State program.” H.R. REP. No. 490, Pt. 1, 101st Cong., 2d Sess. at 239 (1990). The NRDC responds that, while on-road testing may not apply to every vehicle, inspection to detect tampering does apply to all vehicles under the clear terms of the statute.

We agree with the NRDC that the statutory provision provides a conjunctive requirement: the standard must be achievable by a program of emissions testing and visual inspection. Moreover, we find that, although the statute vests the EPA with considerable discretion—to choose, for example, what form of emissions testing to require and what level of volatile organic compounds and other particulate reductions ultimately to set—the statute does clearly require that the standard be the product of two different kinds of testing. In effect, the provision circumscribes the EPA’s standard-setting discretion by specifying the two criteria on which it must base its decision. To the extent that the EPA develops target reduction rates by ignoring one or the other, its reduction forecasts are overly conservative and out of keeping with clear statutory requirements.²⁴

Applied to the EPA’s actual testing decisions, our assessment of the statute requires that we affirm in part, and remand in part. With respect to the EPA’s decision not to subject certain older vehicles to high-technology IM-240 testing or evaporative system checks, we see no reason to undo the EPA’s standard. The EPA indisputably has applied some form of emissions testing to all vehicles, in accordance with the plain terms of § 182(c)(3)(B)(i). The statute affords the EPA discretion in determining the type of emissions testing to apply, and under the second step of *Chevron*, we find no cause to doubt the reasonableness of the EPA’s conclusion. The EPA considered evidence that idle tests suffice for older carbureted, noncomputerized models, but are insufficient to test emissions for newer cars, which come equipped with sensors and computers that continually adjust emissions. Moreover, the EPA demonstrated that the costs of IM-240 testing for older vehicles far exceed the costs of idle testing. See 57 Fed. Reg. at 52,951. Finally, we note that the EPA’s detailed defense of this decision in the administrative record is sufficient to withstand the NRDC’s inadequate explanation charge.

We are constrained, however, to grant the NRDC’s petition with respect to the EPA’s failure to subject older vehicles to visual inspections to detect tampering. As noted above, although the precise form of testing may be discretionary, Congress clearly instructed that the performance standard represent the product of some form of (1) emissions testing and (2) visual inspection to detect tampering for all vehicles. The Senate recognized the prominent success rate of visual inspections in detecting fuel switching and tampering, noting that in areas without I/M programs, fourteen percent of all cars have been subject to fuel switching, but that the figure drops to ten percent with an I/M program and to six percent with an I/M

²⁴ For a more pedestrian illustration, consider a statute that requires the Administrator to create the perfect weight loss regime by setting a weekly target weight loss achievable by a program combining diet and exercise. If the administrator sets a standard based on the effects of a week-long diet and a sedentary lifestyle, that standard under-measures the amount of weight loss feasible under the statutorily prescribed regime. The statute allows considerable discretion, but circumscribes that discretion by spelling out the method by which it expects the Administrator to arrive at a reasonable target.

program combined with anti-tampering checks. *See* S. REP. No. 101-228, 101st Cong., 2d Sess. 39, *reprinted* in 1990 U.S.C.C.A.N. 3425. Because the EPA was without discretion to exempt pre-1984 models from visual inspection, we remand so that the EPA may recalibrate its standard after including the relevant tests.

* * *

CONCLUSION

As set out above, we grant the petitions for review insofar as they challenge the propriety of the EPA's committal SIP policy and the exemption of pre-1984 vehicles from visual inspection. The petitions are in all other respects denied.

So Ordered.

NOTES

1. The 1990 Amendments established deadlines for submittal of SIP revisions to include: (1) basic I/M provisions due immediately after November 15, 1990 for all ozone nonattainment areas; (2) enhanced I/M provisions due November 15, 1992 for all serious, severe, and extreme ozone nonattainment areas; and, (3) provisions to insure implementation of reasonably available control technology (RACT) for all major stationary sources of NO_x in certain ozone nonattainment areas by November 15, 1992. Why did the EPA extend each of these deadlines? Why does the court disapprove the extension of the first deadline but allow extension of the other two?

2. The 1990 Amendments require that the enhanced I/M programs required for serious, severe, and extreme ozone nonattainment areas "take effect" on November 15, 1992. The EPA promulgated rules calling for full implementation of these enhanced programs by 1996. Is the "take effect" language of § 182(c)(3)(B) ambiguous as found by the court?

3. Interstate transport regions are authorized by § 176A of the Clean Air Act whenever the EPA Administrator "has reason to believe that the interstate transport of air pollutants from one or more states contribute significantly to a violation of a national ambient air quality standard in one or more other states" § 176A(a). Such regions may be established by petition from the Governor of any state or on the Administrator's own motion. *Id.* The Act itself established a single "ozone transport region" that encompasses 11 coastal states and the District of Columbia, stretching from the District to Maine. § 184(a). It is this region that is at issue in the principal case. Note that § 184(b)(1)(A) requires that each state in an ozone transport region submit a SIP revision requiring "that each area in such state that is a metropolitan statistical area [as established by the Bureau of Census, *see* § 107(d)(4)(A)(iv)] or part thereof with a population of 100,000 or more [comply with requirements for an enhanced I/M program.]" Notwithstanding this language, EPA decided to exempt counties within these metropolitan statistical areas if they had fewer than 200 residents per square mile. Why does the court uphold this rule? Is the decision consistent with the statute? Is the court's holding that a basic I/M program is not required for "every square mile of moderate regions" more or less compelling than its decision with respect to enhanced I/M programs in ozone transport regions?

CITIZENS AGAINST REFINERY'S EFFECTS, INC. v. EPA

643 F.2d 183 (4th Cir. 1981)

K. K. HALL, Circuit Judge.

Citizens Against the Refinery's Effects (CARE) appeals from a final ruling by the Administrator of the Environmental Protection Agency (EPA) approving the Virginia State Implementation Plan (SIP) for reducing hydrocarbon pollutants. The plan requires the Virginia Highway Department to decrease usage of a certain type of asphalt, thereby reducing hydrocarbon pollution by more than enough to offset expected pollution from the Hampton Roads Energy Company's (HREC) proposed refinery. We affirm the action of the administrator in approving the state plan.

THE ACT

The Clean Air Act establishes National Ambient Air Quality Standards (NAAQS) for five major air pollutants. 42 U.S.C. § 7409; 40 C.F.R. § 50 (1976). The EPA has divided each state into Air Quality Control Regions (AQCR) and monitors each region to assure that the national standard for each pollutant is met. 42 U.S.C. § 7407. Where the standard has not been attained for a certain pollutant, the state must develop a State Implementation Plan designed to bring the area into attainment within a certain period. 42 U.S.C. § 7410. In addition, no new source of that pollutant may be constructed until the standard is attained. 40 C.F.R. § 51.18 (1973).

The Clean Air Act created a no-growth environment in areas where the clean air requirements had not been attained. EPA recognized the need to develop a program that encouraged attainment of clean air standards without discouraging economic growth. Thus the agency proposed an Interpretive Ruling in 1976 which allowed the states to develop an "offset program" within the State Implementation Plans. 41 Fed. Reg. 55,524 (1976). The offset program, later codified by Congress in the 1977 Amendments to the Clean Air Act, permits the states to develop plans which allow construction of new pollution sources where accompanied by a corresponding reduction in an existing pollution source. 42 U.S.C. § 7502(b)(6) and § 7503. In effect, a new emitting facility can be built if an existing pollution source decreases its emissions or ceases operations as long as a positive net air quality benefit occurs.

If the proposed factory will emit carbon monoxide, sulfur dioxide, or particulates, the EPA requires that the offsetting pollution source be within the immediate vicinity of the new plant. The other two pollutants, hydrocarbons and nitrogen oxide, are less "site-specific," and thus the ruling permits the offsetting source to locate anywhere within a broad vicinity of the new source.

The offset program has two other important requirements. First, a base time period must be determined in which to calculate how much reduction is needed in existing pollutants to offset the new source. This base period is defined as the first year of the SIP or, where the state has not yet developed a SIP, as the year in which a construction permit application is filed. 41 Fed. Reg. 55,529 (1976). Second, the offset program requires that the new source adopt the Lowest Achievable Emissions Rate (LAER) using the most modern technology available in the industry. 41 Fed. Reg. 55,528-9 (1976).

THE REFINERY

HREC proposes to build a petroleum refinery and offloading facility in Portsmouth, Virginia. Portsmouth has been unable to reduce air pollution enough to attain the national

standard for one pollutant, photochemical oxidants, which is created when hydrocarbons are released into the atmosphere and react with other substances. Since a refinery is a major source of hydrocarbons, the Clean Air Act prevents construction of the HREC plant until the area attains the national standard.

In 1975, HREC applied to the Virginia State Air Pollution Control Board (VSAPCB) for a refinery construction permit. The permit was issued by the VSAPCB on October 8, 1975, extended and reissued on October 5, 1977 after a full public hearing, modified on August 8, 1978, and extended again on September 27, 1979. The VSAPCB, in an effort to help HREC meet the clean air requirements, proposed to use the offset ruling to comply with the Clean Air Act.

On November 28, 1977, the VSAPCB submitted a State Implementation Plan to EPA which included the HREC permit. The Virginia Board proposed to offset the new HREC hydrocarbon pollution by reducing the amount of cutback asphalt⁸ used for road paving operations in three highway districts by the Virginia Department of Highways. By switching from "cutback" to "emulsified" asphalt, the state can reduce hydrocarbon pollutants by the amount necessary to offset the pollutants from the proposed refinery.

EPA requested some changes in the state plan, including certain monitoring changes and verification from the Virginia Attorney General that the offset program was legally enforceable. The plan was transmitted by the EPA Region III director to EPA headquarters on September 9, 1978. Notices of the proposed plan were published on October 10, 1978 and again on May 1, 1979. 43 Fed. Reg. 46,554 (1978). 44 Fed. Reg. 25,471 (1979). Numerous comments were received, including several from CARE. The EPA administrator carefully considered the comments and approved the Virginia offset plan on January 31, 1980.

CARE raises four issues regarding the state plan. First, they argue that the geographic area used as the base for the offset was arbitrarily determined and that the area as defined violates the regulations. Second, CARE contends that EPA should have used 1975 instead of 1977 as the base year to compare usage of cutback asphalt. Third, CARE insists that the offset plan should have been disapproved since the state is voluntarily reducing usage of cutback asphalt anyway. Fourth, CARE questions the approval of the plan without definite Lowest Achievable Emissions Rates (LAER) as required by the statute. We reject the CARE challenges to the state plan.

* * *

The Geographic Area

CARE contends that the state plan should not have been approved by EPA since the three highway-district area where cutback usage will be reduced to offset refinery emissions was artificially developed by the state. The ruling permits a broad area (usually within one AQCR) to be used as the offset basis. 41 Fed. Reg. 55,529 (1976).

The ruling does not specify how to determine the area, nor provide a standard procedure for defining the geographic area. 41 Fed. Reg. 55,529 (1976). Here the Virginia Board originally proposed to use four highway districts comprising one-half the state as the offset area. When this was found to be much more than necessary to offset pollution expected from the refinery, the state changed it to one highway district plus nine additional counties. Later the proposed plan was again revised to include a geographic area of three highway districts.

⁸ Cutback asphalt has a petroleum base which gives off great amounts of hydrocarbons. "Emulsified" asphalt uses a water base which evaporates giving off no hydrocarbons.

The agency action in approving the use of three highway districts was neither arbitrary, capricious, nor outside the statute. First, Congress intended that the states and the EPA be given flexibility in designing and implementing SIPs. See H.R. Rep.No. 95-294, 95th Cong., 1st Sess., *reprinted in* (1977) U.S.Code Cong. & Ad. News 1077, 1290-92. Such flexibility allows the states to make reasoned choices as to which areas may be used to offset new pollution and how the plan is to be implemented. Second, the offset program was initiated to encourage economic growth in the state. 41 Fed. Reg. 55,525 (1976). Thus a state plan designed to reduce highway department pollution in order to attract another industry is a reasonable contribution to economic growth without a corresponding increase in pollution. Third, to be sensibly administered the offset plan had to be divided into districts which could be monitored by the highway department. Use of any areas other than highway districts would be unwieldy and difficult to administer. Fourth, the scientific understanding of ozone pollution is not advanced to the point where exact air transport may be predicted. Designation of the broad area in which hydrocarbons may be transported is well within the discretion and expertise of the agency.

THE BASE YEAR

Asphalt consumption varies greatly from year to year, depending upon weather and road conditions. Yet EPA must accurately determine the volume of hydrocarbon emissions from cutback asphalt. Only then can the agency determine whether the reduction in cutback usage will result in an offset great enough to account for the new refinery pollution. To calculate consumption of a material where it constantly varies, a base year must be selected. In this case, EPA's Interpretive Ruling establishes the base year as the year in which the permit application is made. 41 Fed. Reg. 55,529 (1976). EPA decided that 1977 was an acceptable base year. CARE argues that EPA illegally chose 1977 instead of 1975.

Considering all of the circumstances, including the unusually high asphalt consumption in 1977, the selection by EPA of that as the base year was within the discretion of the agency. Since the EPA Interpretive Ruling allowing the offset was not issued until 1976, 1977 was the first year after the offset ruling and the logical base year in which to calculate the offset. Also, the permit issued by the VSAPCB was reissued in 1977 with extensive additions and revisions after a full hearing. Under these circumstances, 1977 appears to be a logical choice of a base year.

THE LEGALLY BINDING PLAN

For several years, Virginia has pursued a policy of shifting from cutback asphalt to the less expensive emulsified asphalt in road-paving operations. The policy was initiated in an effort to save money, and was totally unrelated to a State Implementation Plan. Because of this policy, CARE argues that hydrocarbon emissions were decreasing independent of this SIP and therefore are not a proper offset against the refinery. They argue that there is not, in effect, an actual reduction in pollution.

The Virginia voluntary plan is not enforceable and therefore is not in compliance with the 1976 Interpretive Ruling which requires that the offset program be enforceable. 41 Fed. Reg. 55,526 (1976). The EPA, in approving the state plan, obtained a letter from the Deputy Attorney General of Virginia in which he stated that the requisites had been satisfied for establishing and enforcing the plan with the Department of Highways. Without such authority, no decrease in asphalt-produced pollution is guaranteed. In contrast to the voluntary plan, the offset plan guarantees a reduction in pollution resulting from road-paving operations.

THE LOWEST ACHIEVABLE EMISSIONS RATE

Finally, CARE argues that the Offset Plan does not provide adequate Lowest Achievable Emission Rates (LAER) as required by the 1976 Interpretive Ruling because the plan contains only a 90% vapor recovery requirement, places an excessive 176.5 ton limitation on hydrocarbon emissions, and does not require specific removal techniques at the terminal. EPA takes the position that the best technique available for marine terminals provides only a 90% recovery and that the 176.5 ton limit may be reduced by the agency after the final product mix at the terminal is determined.

Since the record shows no evidence of arbitrary or capricious action in approving the HREC emissions equipment, the agency determination of these technical matters must be upheld. *Udall v. Tallman*, 380 U.S. 1 (1965).

CONCLUSION

In approving the state plan, EPA thoroughly examined the data, requested changes in the plan, and approved the plan only after the changes were made. There is no indication that the agency acted in an arbitrary or capricious manner or that it stepped beyond the bounds of the Clean Air Act. We affirm the decision of the administrator in approving the state plan.

NOTES

1. Recall that nonattainment plans are required to “provide for the implementation of reasonably available control measures as expeditiously as practicable”, and that existing sources in nonattainment areas are required to use reasonably available control technology (RACT) to control their emissions. § 172(c)(1). Under these provisions should the highway department have been *required* to switch to emulsified asphalt, independent of any offset plan? Note that under EPA’s current policy only emission reductions not required by law qualify for the offset program. 51 Fed. Reg. 43,814 (1986).

2. In order to obtain approval of the offset proposal for the Hampton Roads refinery, Virginia had to submit a request for a SIP revision to the EPA. Under EPA’s current procedures, however, states may promulgate “generic” rules for approving offsets so long as they involve “tightly drawn mechanical procedures . . . which ensure that the use of the rules *cannot* interfere with attainment and maintenance of ambient air quality standards.” 46 Fed. Reg. 20,551, 20,552 (1981); *see also* 51 Fed. Reg. 43,835 (1986). In 1982, EPA adopted an interim Emissions Trading Policy to further implement, among other things, the offset program. Final rules implementing the policy were promulgated in 1986. 51 Fed. Reg. 43,814 (1986). The policy establishes “emission reduction credits” (ERCs) as “the common currency of all trading activity.” *Id.* at 43,831. “[O]nly reductions which are *surplus, enforceable, permanent, and quantifiable* can qualify as emission reduction credits and be banked or traded.” *Id.* (Emphasis in original.) In order to obtain EPA approval to implement the policy, states must adopt detailed rules to register ERCs and to track their ownership, use, and transfer. *Id.* at 43,835. States without the required rules may continue to use the SIP revision process. *Id.* at 43,836. The related emission trading policies addressing “bubbles” and “netting” are reproduced in part, and otherwise discussed, at Chapter 9, Section E. *infra*.

3. As described in CARE, the emissions offset policy is essentially a 1+ to 1 policy; *i.e.*, the Act requires that major new sources achieve reductions such that “total allowable emissions from existing sources in the region, from new or modified sources which are not major emitting facilities, and from the proposed source will be *sufficiently less than* total

emissions from existing sources. . . .” § 173(a)(1)(A). (Emphasis added). The 1990 Amendments specify particular offset ratios for major new sources in ozone nonattainment areas. For example, the standard offset for major new sources in severe ozone nonattainment areas is 1.3 to 1, unless the state requires BACT for all existing sources in which case the offset is 1.2 to 1. § 182(d).

4. The 1990 Amendments now allow the owner or operator of a new or modified major stationary source to obtain their offsets from other nonattainment areas if two conditions are met: (1) the other nonattainment area has an equal or higher nonattainment classification; and (2) the emissions that will be reduced in the other area are the kind of emissions which contribute to the NAAQS violation. § 173(c). Oddly though, the reduction required must only be “equal or greater” than the new emissions; whereas reductions in the *same* nonattainment area must be such that the new emissions “will be sufficiently less than [prior emissions] . . . so as to represent . . . reasonable further progress. . . .” *Compare* § 173(c)(1) with § 173(a)(1)(A).

5. The “emission offset” policy applies solely to nonattainment areas. It has the advantage of allowing new growth in many heavily industrialized areas. It also assures that air quality in these areas is not further degraded. As applied in the *CARE* decision, does the policy serve or hinder the goal of achieving the NAAQS?

6. The requirement that new sources in nonattainment areas achieve LAER is substantial. Section 171(3) defines LAER as either the most stringent emission limit for that type of source contained in any SIP, unless the new source operator shows that such limits cannot be achieved, or the most stringent limit achieved in practice for such source, *whichever is more stringent*.

D. Nonattainment Area Plans

Section 172 of the Act establishes special standards for nonattainment area plans. When an area is designated nonattainment, EPA is required to establish a schedule that may not extend beyond three years for submitting a plan to achieve the NAAQS. § 172(b). Among other things, nonattainment area plans must provide for the implementation of all “reasonably available control measures” (RACM) and must require existing sources in the area to adopt “reasonably available control technology” (RACT). The plan must also insure “reasonable further progress” (RFP) toward achieving the NAAQS. RFP is defined by law for ozone nonattainment areas as previously described. For other areas the EPA is required to define RFP for a particular plan “as may reasonably be required . . . for the purpose of ensuring attainment . . . by the applicable date.” § 171(1). In addition, O₃, CO, and PM-10 nonattainment areas must meet certain “milestones” and where a state fails to meet a milestone, EPA may require, among other things, the imposition of contingency measures which each nonattainment area plan is required to adopt. *See e.g.*, §§ 172(c)(9), 182(g), 187(d), 189(c). Such contingency measures “take effect . . . without further action by the State, or the Administrator” if a nonattainment area fails to make reasonable further progress or to attain the primary NAAQS by the applicable attainment date. § 172(c)(9).

Primary standard attainment dates for O₃, CO, and PM-10 areas are set out in the statute. §§ 181(a)(1), 186(a)(1), 188(c). For other areas, attainment “shall be the date by which

attainment can be achieved as expeditiously as practicable, but no later than five years from the date the area was designated nonattainment. . . ." § 172(a)(2)(A); *see also* § 192(a). EPA, however, has discretion to allow as much as ten years from the date of designation "considering the severity of nonattainment and feasibility of pollution control measures." § 172(c)(2)(A). Moreover, in limited cases, EPA may approve up to two, one-year extensions of the attainment date. §§ 172(a)(2)(C); 181(a)(5); 186(a)(4); 188(d). In serious PM-10 nonattainment areas, a five-year extension is available. § 188(e).

NOTES

1. The 1990 Amendments establish many new requirements for SIPs to help insure compliance with the NAAQS by the deadlines set in the statute. What happens, however, if a state ultimately fails to meet these deadlines? In *Delaney v. EPA*, 898 F.2d 687 (9th Cir. 1991), the court reviewed a decision by EPA allowing the State of Arizona three years from the date of a plan approval to meet the NAAQS, notwithstanding the fact that the compliance date set out in the statute had long since expired. The court rejected EPA's decision and found that in such a case, "the national ambient air quality standards must be attained as soon as possible with every available control measure. . . ." *Id.* at 691.

2. A list of all PM-10, carbon monoxide, and ozone nonattainment areas at the time the 1990 Amendments were enacted appears in the House Report, broken down by categories (*i.e.*, extreme, severe, etc.). H.R. Rep. No. 490, 101st Cong., 2nd Sess. 197-98, 204-05, 208-09, 230-31, 258-59 (1990). More current information on the status of nonattainment areas can be found in an annual report published by the EPA on national emission trends. The most recent report at the time of this writing was National Air Pollutant Emission Trends, 1995, EPA-454/R-96-005. Current information is available at the EPA's Office of Air and Radiation world wide web site—<http://www.epa.gov/oar/>.

NATIONAL STEEL CORPORATION V. GORSUCH

700 F.2d 314 (6th Cir. 1983)

NATHANIEL R. JONES, Circuit Judge.

The Environmental Protection Agency (EPA), in a final agency action pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401, *et seq.*, has approved, conditionally approved, and disapproved various provisions of the State Implementation Plan adopted by the State of Michigan in an effort to comport with nationally-required air quality standards. Petitioner National Steel Corporation, Great Lakes Steel Division, is seeking review of that action. For the reasons detailed below, we find that the EPA administrator neither overstepped the bounds of her authority nor made decisions which were "arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A) (1970). Accordingly, we affirm the EPA final action.

I

A combined state and federal program to control air pollution was formulated in 1970 through various amendments to the Clean Air Act, 42 U.S.C. § 7401, *et seq.* (the Act).

Pursuant to the mandates of §§ 108 and 109 of the Act, the EPA promulgated national ambient air quality standards (NAAQS) for a variety of pollutants. The standards relevant to the case before us are those governing total suspended particulates in the air. The limitations on particulate matter were set at levels deemed necessary to protect the public health and welfare.

The states were given the primary responsibility for achieving these air quality levels and, absent special circumstances, were required to do so by 1975. In keeping with this responsibility, the states were required, under § 110 of the Act to develop state implementation plans (SIPs) providing for the attainment and maintenance of the federal standards. The administrator was required to approve any state plan satisfying the criteria detailed in §110(a)(2)(A)-(H).

* * *

As of 1975, portions of many states had failed to achieve the national standards, despite the existence of previously approved SIPs. The Act was amended in 1977 in order to deal with these “nonattainment areas”. Under the amendment (now Part D of Title I of the Act), states are required to submit revisions to their SIPs demonstrating that the NAAQS will be attained “as expeditiously as practicable,” though no later than the end of the 1982 calendar year.

These Part D plans must meet the requirements of § 172(b) of the Act. In pertinent part, § 172(b) provides that the SIP shall, *inter alia*:

(2) provide for the implementation of all reasonably available control measures as expeditiously as practicable;

(3) require, in the interim, reasonable further progress (as defined in Section 171(11)) including such reduction in emissions from existing sources in the area as may be obtained through the adoption, at a minimum, of reasonably available control technology (RACT).

42 U.S.C. § 7502(b).

In an effort to, at minimum, prevent the exacerbation of existing nonattainment problems, Congress required all SIPs to provide for a moratorium on the construction of new sources of pollutants, or on the modification of existing ones, unless the state had an approved Part D plan by July 1, 1979. Michigan did not have an approved plan by the deadline and the EPA imposed the required moratorium.

In determining the requirements for an acceptable Part D plan, the EPA addressed a number of practical concerns. Most relevant to this case was the stance the EPA took with regard to fugitive emissions—*i.e.*, matter having a negative impact on air quality which does not originate from a stack or vent, including, but not limited to, dust from ore storage piles, road dust and dust from nonindustrial urban sources. Since these emissions could easily play a significant role in nonattainment, and are so difficult to measure or control, it was clear that attainment would be difficult to demonstrate. The EPA recognized the possibility that a state might require RACT and still be unable to demonstrate attainment because of these immeasurables.

To avoid this problem, the EPA established alternative criteria for determining whether a state’s plan was acceptable. First, the EPA decided to approve state plans where the state mandated RACT on all major stationary sources, met the other requirements of § 172, and agreed to submit a schedule of measures to control fugitive sources of matter. Alternatively, the EPA decided to approve state plans which could demonstrate attainment “as expeditiously as practicable” *without* requiring RACT.

In order to assess whether a particular Part D SIP revision reflected RACT, EPA amassed data indicating levels of performance achieved by application of control technology at

particulate sources. A particularly large amount of data was compiled with regard to iron and steel sources. On September 8, 1980, the EPA announced that it had compiled a "guidance" document summarizing that data. The EPA indicated that it would combine this data with that presented by the state and then approve, disapprove or conditionally approve all elements of the SIPs submitted.

Applying this statutory and regulatory scheme, the EPA approved Michigan's original SIP in 1972. In 1978, however, the administrator designated certain areas of Michigan, including Detroit, "nonattainment areas" for particulate matter and various chemicals. On April 25, 1979, Michigan submitted its required Part D revisions for these areas.

On May 22, 1981, the EPA published a notice of final rulemaking with regard to Michigan's Part D revisions for those nonattainment areas containing iron and steel sources. The *overall* strategy for emission and particulate matter control in these source areas was conditionally approved upon the state's commitment to adopt regulations which the EPA felt reflected RACT.

* * *

It is this final rulemaking with regard to iron and steel sources which Great Lakes Steel contests.

III

The petitioner's first argument has several elements, all urging the conclusion that the EPA has overstepped its authority *and* acted arbitrarily in making its RACT determinations in this case.

A

First, petitioner claims that, since fugitive dust significantly contributes to nonattainment, the EPA should not require stationary sources to install RACT before Michigan completes its own studies concerning the relationship between fugitive dust and nonattainment and the possible methods for controlling that particular pollutant. Great Lakes Steel contends that it is unreasonable to interpret the statute as requiring mandatory RACT absent proof that the imposition of the installation cost will in any way contribute to attainment.

The EPA interprets the Act to unambiguously require installation of RACT *at a minimum* on existing sources in the nonattainment areas. While the EPA does not deny that it has itself adopted an administrative exemption to this otherwise "mandatory" requirement, it views that exemption as being narrowly tailored to fit within, and further, the spirit and goals of the Act. On the contrary, the EPA feels that the exemption suggested by Great Lakes Steel, *i.e.*, to wait and see what the state studies show before requiring RACT, would altogether vitiate the mandates of § 172, thereby *undercutting* the purposes of the Act.

* * *

The point is well taken that an action which will *clearly* not further attainment should not be required. However, as noted previously, it is unclear to what extent each source of pollutants contributes to the nonattainment problem. All admit that the nature of the problem is too complex to allow for specific determinations of whether particular actions will or will not best further the attainment goal. It cannot be debated that RACT on existing stationary sources will ensure that *those* sources are not contributing to or exacerbating nonattainment. It does not appear unreasonable for Congress to have granted the EPA the power to act with regard to known, identifiable sources of particulate matter, even though they remain unable to quantify the precise degree to which those sources are preventing the attainment of the NAAQS.

Section 172(b)(3) of the Act specifically states that a SIP “shall . . . require” RACT in the circumstances it defines. There is nothing in the statute which indicates that these terms are not to be given their plain meaning. In addition, we could find nothing in the legislative history of these provisions which in any way contradicts the mandatory character of the language employed.

* * *

B

Second, Great Lakes Steel asserts that the EPA has essentially created its own uniform set of RACT standards, bearing no relation to the nonattainment problem in Michigan. They claim that the imposition of the EPA’s own standards has improperly usurped the statutory role of the state. This, petitioner argues, is both arbitrary and, by analogy, “ultra vires”. EPA counters that it has *not* adopted “uniform” RACT standards and that the information it has compiled has not been “imposed” upon the states. Instead, EPA argues that its data is merely a starting point for the states to develop RACT requirements and a guideline for EPA’s general evaluation of a state’s RACT proposals, *given* the economic and technical circumstances surrounding the particular sources being regulated.

* * *

There is no doubt that the EPA is empowered to evaluate proposed RACT standards to *some* extent. While the state does have the primary responsibility for establishing RACT guidelines, the EPA’s statutory obligation before approving a SIP is to ensure that RACT is actually provided for. *See* § 110(a)(2)(I) of the Act in conjunction with § 172(b)(3). The EPA claims that it only uses its RACT data as a guide in fulfilling this obligation. It cites a variety of EPA notices and regulations for the proposition that the EPA has not adopted inflexible standards. The EPA defines RACT as:

the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. Therefore, depending on *site-specific considerations*, such as geographic constraints, RACT *can differ* for similar sources.

45 Fed. Reg. 59,331 (September 9, 1980) (emphasis added). The EPA claims that it will review and evaluate proposed standards on the basis of the *state analysis*, “taking into account all the available data as well as public comment on the state’s analysis and the EPA’s evaluation thereof.” 45 Fed. Reg. 59,199 (September 8, 1980).

This picture of flexibility is drawn into question, however, when one considers the practical application of these standards. While the EPA indicates that it only requires a state to make a threshold offering of information on which an evaluation can be based, it does seem to establish a presumption, albeit rebuttable, that its own data defines RACT. Consider EPA Statement at 45 Fed. Reg. 59,331 (September 9, 1980):

USEPA believes that the burden of demonstrating that a regulation represents RACT rests on the state. In reviewing a proposed SIP revision to determine its adequacy, USEPA can verify independently that the provisions in the state plan represent RACT. Although USEPA has not specified uniform RACT standards for the iron and steel industry, it has collected data which reflects the emission limitations achieved by various iron and steel sources applying control technology. . . . *Where a state proposed regulations which are not technically supported by USEPA’s data, the state must submit adequate data supporting its proposal as representing RACT.*

The EPA is not required to accept a state's data without undertaking a critical evaluation of it. The accumulation of an alternative database would seem to be a necessary framework for such an evaluation. The formulation of a presumption *against* the acceptability of state standards appears troublesome, however. By placing such an additional burden on the states, the EPA seems to be removing some of the flexibility that Congress meant to afford the states in formulating their individual implementation plans. This may, indeed, be beyond the bounds of the discretion which the EPA is permitted to exercise in fulfilling its secondary role. We need not, however, nor do we choose to, resolve that issue in the case before us. In the circumstances presented, we consider the EPA's use of its own data for making its RACT determinations to be in keeping with its statutory role. Reason dictates that the EPA must have *some* basis from which to evaluate proposed SIPs; "approval" absent data to consider would be no more than rubber-stamping. The EPA can only be in a position to fulfill its statutory obligations if it has some degree of expertise, or some way of getting that expertise, regarding RACT in each relevant industry. In the instant case, Michigan did not supply detailed information in support of its RACT determinations. Where a state fails to supply the information necessary for a proper evaluation by the EPA, the EPA must be free to use its own acquired knowledge. In such circumstances, we readily find that the EPA has neither overstepped the bounds of its authority nor acted unreasonably.

* * *

In sum, we find that the EPA's final rulemaking with regard to Michigan's Part D SIP revisions was wholly within the bounds of its statutory authority and was neither arbitrary and capricious, nor otherwise not in accordance with law. Accordingly, we affirm that rulemaking in all respects.

NOTES

1. One alternative deemed acceptable by EPA for state nonattainment plans was a plan which could demonstrate attainment as expeditiously as practicable without requiring RACT. This alternative was not chosen by Michigan and thus is not at issue in the principal case. Is the alternative lawful? See the references to § 172(b)(2), (3) in the *National Steel* case. Note that these provisions were rearranged and in some cases changed by the 1990 Amendments. The basic RACT requirement remains in the statute, although it now appears at § 172(c)(1).

2. The 1990 Amendments also established a new entity—the RACT/BACT/LAER Clearinghouse (RBLC). § 108(h); *see also* § 173(d). This is a central repository or data base encompassing all information received by EPA under State plan provisions concerning emission control technology. The data base is available to the general public. *See* <http://tnwww.rtpnc.epa.gov/html/blis/blis.htm>. How is this information likely to affect an EPA or State determination as to what constitutes RACT?

3. EPA's authority to issue guidance on various control technologies appears at § 108(b) of the Act. The 1990 Amendments reference this authority, and adopt yet another acronym—CTG—for control technique guidelines. *See e.g.*, § 183; *see also* § 178 which requires EPA to issue guidance documents solely with respect to LAER. At the time the 1990 Amendments were adopted EPA had prepared 29 CTGs. Twelve additional CTGs were in production. *See* J. QUARLES & W. LEWIS, *THE NEW CLEAN AIR ACT*, App. B. (1990). The

EPA also maintains a web site providing technical support in evaluating air pollution control technology questions for stationary sources. [Http://www.epa.gov/oar/oaqps/ctcl](http://www.epa.gov/oar/oaqps/ctcl).

4. As the *National Steel* case indicates, the sanction for failing to have an approved Part D program under the 1977 Amendments was a moratorium on the construction of major new stationary sources in the nonattainment area. EPA was also required to disapprove any grants under the Act, and the Secretary of Transportation was required to disapprove highway grants to states which failed to submit a Part D plan in a timely fashion. The 1990 Amendments keep in place any construction moratoria in effect under the earlier law until a revised SIP which meets the standards of the new law is approved, but otherwise omits the construction ban. In its place, the 1990 Amendments impose alternative sanctions. § 179. For virtually any violation of the Part D planning requirements, EPA must impose one of two sanctions. § 179(a). It must impose either a ban on highway money to the affected state or it must impose a 2:1 offset requirement for major new sources in nonattainment areas within the affected state. § 179(b). If the violation results from a state's lack of good faith, both sanctions apply. § 179(a). In addition to these sanctions, limits on grants for sewage treatment plants, authorized under the Clean Water Act, may be imposed. § 316.

STATE OF OHIO V. RUCKELSHAUS

776 F.2d 1333 (6th Cir. 1985)

LIVELY, Chief Judge.

Ohio seeks review of final action of the United States Environmental Protection Agency (EPA) under the Clean Air Act as amended (the Act). 42 U.S.C. §§ 7401 *et seq.* The particular provisions of the Act in controversy are portions of Part D of Subchapter I, 42 U.S.C. §§ 7501-7508, and section 107(d) and (e), 42 U.S.C. § 7407(d) and (e), all of which were added to the Act by the Clean Air Act Amendments of 1977, Pub.L. 95-95.

The question for decision is whether EPA may refuse a state's request to redesignate a county from "nonattainment" to "attainment" where actual monitoring or modeling data from the county show that air quality within the county meets the required ambient standard. EPA denied Ohio's request to redesignate Lorain County as an attainment area for ozone upon determining that, although the air within the county satisfied the National Ambient Air Quality Standards (NAAQS) for ozone, pollutants originating in Lorain County added significantly to the ozone levels in the Cleveland urban area, of which Lorain County is a part. All of the counties in the Cleveland urban area are part of the Greater Cleveland Intrastate Air Quality Control Region (AQCR). Ohio argued that the boundary of the Cleveland urban nonattainment area should be changed by removing Lorain County and filed a petition for review of the EPA's action.

I.

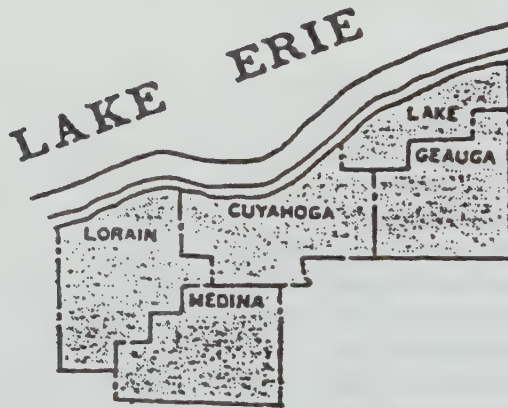
* * *

Acting pursuant to section 107(d)(1) of the Act, Ohio listed nonattainment areas within the State. It identified the counties comprising the Cleveland urban area, including Lorain, Medina, Lake and Geauga Counties, as nonattainment for ozone. In 1982, Ohio, acting pursuant to section 107(e)(1) of the Act, 42 U.S.C. § 7407(e)(1), requested a revision of the

ozone nonattainment designations to remove 46 counties, including Lorain, Medina, Lake and Geauga Counties. There was no request that Cuyahoga County, where the City of Cleveland is located, be redesignated.

EPA published a notice of proposed rulemaking on August 10, 1983 in response to the request. The notice invited public comment and stated that EPA proposed to grant the request as to 36 counties and deny it as to ten, including Lorain and Medina. Following the period of comment, EPA issued its final rulemaking, approving Ohio's redesignation of 37 counties and disapproving the redesignation of nine counties, including Lorain. 49 Fed. Reg. 24, 124 (June 12, 1984). The county approved for redesignation as "attainment" in the final action that had been refused redesignation in the first EPA proposal was Medina. Following the final action of EPA, the Cleveland urban nonattainment area consisted of Cuyahoga, Lorain, Geauga and Lake Counties.

It is undisputed that monitoring data showed that the air within Lorain County met the NAAQS for ozone. EPA recognized this fact, but refused to redesignate Lorain County on the ground that a significant portion of the ozone pollution in the Cleveland urban nonattainment area derives from emissions in Lorain County, which lies upwind from the other three counties in the nonattainment area. The geographical relationship of the four counties in the designated nonattainment area, plus Medina County, is shown in the portion of the Ohio map of counties reproduced here:



In its comments on proposed rulemaking Ohio conceded that "[e]missions from Lorain County contribute to the ozone concentrations in the Cleveland area and should be included in the design of any control program." (Letter from Ohio EPA to U.S. EPA, August 12, 1983). However, Ohio took the position that Lorain County was not in air quality violation for ozone and should not be listed as nonattainment.

II.

Though Ohio makes a number of subsidiary arguments, its basic position is that the Act does not authorize EPA to disapprove a reasonable state designation of an area as "attainment" on the ground that emissions from the area may potentially add to the pollution of a nonattainment area. Underlying this argument is the contention that the state may treat a

county as an “area” for purposes of § 7407(d)(1) and require EPA to so treat it, despite the fact that EPA has designated the county as part of a larger area. Ohio relies on the definition of “nonattainment area” in section 171(2) of the Act, 42 U.S.C. § 7501(2)(1982), “an area which is shown by monitored data or which is calculated by air quality modeling (or other methods determined by the Administrator to be reliable) to exceed any national ambient air quality standard for such pollutant.” Since Lorain County has shown by monitored data that its air does not contain ozone in excess of the NAAQS, it cannot be brought within this definition and, thus, may not be designated “nonattainment.”

Ohio recognizes that Lorain County is in the Cleveland urban area but insists that it may subdivide that area by counties on the basis of air quality information. Ohio argues that the states have the primary role in making such decisions, and EPA should accord deference to state determinations regarding the size of areas designated. Given the measured air quality data on which the request for redesignation of Lorain County was based, EPA acted arbitrarily and capriciously in continuing to designate Lorain County “nonattainment,” according to Ohio.

Ohio also argues that EPA had an alternative and preferable means at its disposal for dealing with the Cleveland ozone problem. EPA should have approved the redesignation of Lorain County to attainment, but required Ohio to amend its State Implementation Plan (SIP) to insure that pollutants from Lorain County, though an attainment area, did not add significantly to the ozone problems of the downwind Cleveland area. Ohio contends that SIPs are at the heart of the entire scheme for improving the quality of the Nation’s air, and that EPA should be required to follow this path to achieve NAAQS within Ohio, including the Cleveland area. Ohio’s preference for this alternative means of enforcing compliance with the NAAQS arises from the fact that Part D of the Act, which applies only to nonattainment areas, contains significant enforcement tools not available to EPA under other provisions. For example, EPA can impose a ban on new construction, require a new source review program that may require greater emissions reduction than other sections of the Act would require, require a motor vehicle inspection and maintenance program with a cutoff of federal funds for noncompliance and require ozone sources to meet emissions limitations at least reflective of reasonably available control technology. The possibility of a ban on new construction and the loss of federal funds for failure to implement a vehicle inspection and maintenance program are matters of serious concern to a local governmental unit.

Finally, Ohio contends that the record does not support EPA’s disapproval of the request for redesignation of Lorain County. Instead of relying on modeling or monitoring in the Cleveland area, EPA based its conclusions about Lorain County’s contributions to Cleveland’s ozone levels on findings made with respect to other major urban centers such as Chicago, St. Louis, Los Angeles and Detroit. In addition, Ohio charges that EPA was totally inconsistent in approving redesignation of Medina County, which also has a direct association with the Cleveland area, while disapproving the request for Lorain County.

III.

EPA maintains that it acted reasonably and within its clear authority under § 7407 in disapproving Ohio’s request with respect to Lorain County. It is not required to designate nonattainment areas by reference to county boundaries. Thus, the fact that a county within a nonattainment area is not in violation of NAAQS for a pollutant is irrelevant. As EPA interprets § 7407(d), it is permitted to designate nonattainment areas by boundaries which include important sources of pollution that contribute to the pollution levels of the area,

without making a separate determination for each political subdivision within the area. EPA asserts that its interpretation of the statute is reasonable since it serves the underlying goal of the Act by requiring steps to be taken that will move an area toward attainment. EPA finds nothing in the language or legislative history of the Act or the 1977 Amendments that would require it to make Lorain County a "section 107(d) area" separate from the general Cleveland urban area of which it is a part.

EPA argues that keeping Lorain County within the nonattainment area serves the purpose behind the enactment of Part D. That purpose was to bring about incremental air quality improvement and timely attainment of national standards in those areas that failed to attain the NAAQS by the deadlines originally set out in the Act. The fact that EPA might have proceeded by the alternate route of requiring Ohio to revise its SIP does not deprive it of authority to proceed under § 7407(d) and Part D, which were designed specifically to deal with the nonattainment problem to which the 1977 Amendments were directed.

EPA responds to Ohio's charge that its denial of redesignation was not supported by the record with several contentions. In the first place, it points to Ohio's admission that pollutants from Lorain County contribute to Cleveland's ozone problem. It also argues that the record contains meteorological data which indicate that the prevailing winds during the peak ozone season do flow from Lorain County to Cuyahoga and Lake Counties. Further, monitoring results in the Cleveland urban area showed ozone violations. These are included in the record. In addition, the record contains documentation that significant quantities of ozone precursors are emitted from sources in Lorain County. Lorain County's emissions constitute 18.7% of the total organic pollutant emissions originating in the four county Cleveland urban nonattainment area.

With respect to the use of data from other urban areas, EPA makes two responses. In the first place, it notes that Ohio did not object to the use of these data during the administrative proceedings, and argues that it may not object at this stage. In addition, EPA maintains that the causes of ozone buildups in major urban centers are well known and the testing done in the area of other large cities provides valid data for determining the effect of Lorain County's emissions on Cleveland.

IV.

A.

In considering an agency's construction of a statute which it administers a court applies a narrow standard of review. If Congress has spoken directly to the precise question in issue, and its intent is clear, that ends the inquiry because both the agency and the court "must give effect to the unambiguously expressed intent of Congress." *Chevron, U.S.A., Inc. v. National Resources Defense Council, Inc.*, 467 U.S. 837 (1984). If the court determines that Congress has not addressed the precise question directly, the duty of the court is to determine whether the agency has based its answer to the question "on a permissible construction of the statute." *Id.* The Supreme Court has long recognized the principle of deference which requires courts to accord "considerable weight" to the construction by an executive department of a statute that it administers. *Id.*

* * *

B.

With these firmly established principles in mind, we turn to the issues in this case. The statutory provision in question, § 7407(d)(1), does not speak directly to the precise question of whether EPA may include in a nonattainment area a county whose air quality meets national

standards. The statute requires each state to identify “those air quality regions, or portions thereof” which do not meet the NAAQS for any air pollutant. Counties are not mentioned, but both Lorain and Medina Counties had previously been included in the Greater Cleveland AQCR. Part D of the Act defines “nonattainment area” as “an area which is shown by monitored data or which is calculated by air quality modeling (or other methods determined by the Administrator to be reliable) to exceed any national ambient air quality standard” for a particular pollutant. § 7501(1). Again, Congress has not directly dealt with the question posed by this appeal. This definition addressed “nonattainment” without prescribing any criteria for determining the proper components of an “area.” In addition, § 7407(e)(1) provides no standard which is to be followed by the administrator of EPA in approving or disapproving a request for redesignation. Thus under the *Chevron* formulation we seek to determine whether EPA’s answer to the question is “based on a permissible construction of the statute.” 467 U.S. at 843.

We conclude that EPA acted reasonably in determining that Lorain County should be included in the Cleveland urban nonattainment area even though actual monitoring disclosed an acceptable level of ozone within the county. The purpose of the Clean Air Act Amendments of 1977 was to ensure additional efforts to bring those areas of the country which had not met the time requirements of the Act into compliance. Congress adopted the scheme of dividing states into attainment, nonattainment and unclassified areas. For nonattainment areas it provided new stringent sanctions which could be applied by EPA to encourage compliance. *United States Steel Corp. v. EPA*, 605 F.2d 283, 284-85 (7th Cir. 1979), *cert. denied*, 444 U.S. 1035 (1980). Once a state has designated an area “nonattainment,” that area may be redesignated only with the approval of EPA. It appears a permissible exercise of this authority for EPA to deny redesignation with respect to a component of a nonattainment area which produces a substantial portion of the area’s pollution even though the air within that component tests at an acceptable level. If it were otherwise, the fortuitous circumstance that pollutants and precursors emitted within a county are moved by prevailing winds to a neighboring county would deprive EPA of the tools Congress provided for attacking pollution in the area of which the county is logically a part. The Cleveland urban area fits the definition of a nonattainment area because the ozone levels in and around Cleveland exceed the NAAQS.

* * *

C.

Having concluded that EPA acted within the scope of its authority, we must now consider whether it acted arbitrarily and capriciously in this case, as claimed by Ohio. Ohio admitted on the record that emissions from Lorain County contribute to the ozone concentrations in the Cleveland area. Given this concession, it is difficult to conceive how EPA could be found to have acted arbitrarily or capriciously by including Lorain County in the Cleveland urban nonattainment area. The technical materials in the record support the conclusion that the contribution of Lorain County’s emissions to the Cleveland ozone problem is significant. We do not believe the fact that EPA did not conduct measurements of the wind-factor effect in the Cleveland area is important. The tests in other major urban areas demonstrated satisfactorily that ozone precursors are carried long distances in the atmosphere and combine with other substances to form ozone in such areas. The results of tests in a number of urban areas were sufficiently similar to form a reliable basis for concluding that the same condition would occur in Cleveland. Even if these data were not sufficient to support EPA’s conclusion, Ohio cannot escape its own concession of the effect of Lorain County’s emissions on the ozone concentrations in the Cleveland area.

Ohio also argues that EPA acted arbitrarily in redesignating Medina County while refusing to remove the “nonattainment” designation from Lorain County. Both counties lie upwind from both Cleveland and Lake County which have ozone levels in excess of the NAAQS. However, compared with the emissions from Lorain County, those from Medina County are insignificant. Lorain County is heavily industrialized while Medina is largely rural with only scattered sources of pollution. EPA acted in the exercise of its discretion in removing Medina County from the nonattainment area while refusing to redesignate Lorain County. We find no abuse of discretion.

The petition for review is denied.

NOTES

1. Does the court correctly apply the *Chevron* test to construe the language of the statute at issue in this case? See *Chevron, USA, Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984). Where is the ambiguity in the statutory language?

2. The 1990 Amendments address the problem raised by *Ohio v. Ruckelshaus*, in part. Specifically, the Amendments provide that serious, severe, or extreme O₃ or CO nonattainment areas, must encompass the entire metropolitan statistical area, as established by the Bureau of the Census. § 107(d)(4)(A)(iv). This designation can be avoided, however, if the governor of the affected state satisfies EPA that sources in a certain portion of the metropolitan statistical area do not contribute significantly to the ambient air quality standard violation.

3. The 1990 Amendments also changed the definition of a nonattainment area. Under the prior law, nonattainment area was defined as “. . . an area which is shown by monitored data or which is calculated by air quality modeling . . . to exceed any national ambient air quality standard . . .” The 1990 Amendments define a “nonattainment area” as simply “. . . an area which is designated ‘nonattainment’ . . . within the meaning of § 107(d).”

4. Section 107(d) operates by temporarily freezing the designation of all areas, subject to the possible expansion of serious, severe, or extreme ozone or carbon monoxide nonattainment areas as described in note 2. § 107(d)(1)(C). By March 15, 1991, however, states were required to submit to EPA a list of all air quality control regions within the state specifying whether they are attainment areas, nonattainment areas, or unclassifiable for ozone and carbon monoxide. The process works in only one direction—it may be used to designate what had previously been an attainment area as nonattainment, but it cannot be used to redesignate a nonattainment area as attainment. § 107(d)(4)(iii).

5. The general provisions regarding redesignation are at § 107(d)(3). Under these provisions, a redesignation may be made at the instigation of either EPA or a state. Areas may not be redesignated as attainment areas unless EPA finds, among other things, that “the improvement in air quality is due to permanent and enforceable reductions . . .” and that a maintenance plan for the area has been approved in accordance with § 175A. § 107(d)(3)(E). This maintenance plan must provide for maintenance of the ambient air quality standard for at least ten years after redesignation. In *Southwestern Pennsylvania Growth Alliance v. EPA*, 144 F.3d 984 (6th Cir. 1998), the court described redesignation under § 107(d)(3) as a “two step” process. “First the EPA determines whether an area has met applicable technical chemical standards for ‘attainment’ . . .” *Id.* at 986. Then, the EPA determines whether the

area has met the additional criteria for redesignation as set out at § 107(d)(3)(E).

6. In the Transportation Equity Act for the 21st Century (TEA-21), Pub. L. 105-178 (1998), Congress stretched the deadline for designation of $\text{PM}_{2.5}$ and ozone nonattainment areas required for the new NAAQS established for these pollutants in 1997. 62 Fed. Reg. 38,856 (1997). Section 6102 of TEA-21 requires the EPA to obtain three years of monitoring data, and to fund 100% of the cost of developing the necessary monitoring network. The new network must be established by the end of 1999. States will have one year following the submission of monitoring data to submit § 107(d)(1) designations. Without these changes, the § 107(d)(1) designations would have been required by July, 1998. The new deadline now appears to be December 31, 2003. In addition, states were given an additional year (until July, 1999) to submit new ozone designations. TEA-21, § 6103(a).

PROBLEM #1: STATE IMPLEMENTATION PLANS AND NONATTAINMENT AREAS

The Mohave Air Quality Control region in the State of Stagnation encompasses a three-county area that includes the City of Mohave and its suburbs. The Mohave metropolitan area has a population of approximately six million people and is one of the fastest growing regions in the country with an annual growth rate of 3%.

As of November 15, 1990, the Mohave Air Quality Control Region was a nonattainment areas for ozone, carbon monoxide, and particulate matter. The average ambient concentrations for these pollutants in the region area as follows:

Ozone—0.21 ppm (hourly average/day)

0.17 ppm (8 hour average)

Carbon Monoxide—17.5 ppm (8-hour average)

PM-10—100 $\mu\text{g}/\text{m}^3$ (annual geometric mean)

You are responsible for revising and implementing the Stagnation state implementation plan. What action is Stagnation required to take to comply with the Clean Air Act? What additional information, if any, will you need to ascertain the State's obligations? Given the expected increase in population, what additional options should be considered by the City and the State to help ensure that compliance with the law will be achieved? What sanctions are imposed if the state fails to achieve its pollution reduction milestones?

NOTE: The primary NAAQS for O_3 is 0.12 ppm; for CO, 9 ppm (8-hour average (can be exceeded once)); and for PM-10, 50 $\mu\text{g}/\text{m}^3$

E. Transboundary Disputes

STATE OF CONNECTICUT V. EPA

696 F.2d 147 (2d Cir. 1982)

IRVING R. KAUFMAN, Circuit Judge:

These challenges to a final ruling of the Environmental Protection Agency ("EPA" or "Agency") call upon us to steer a course through the labyrinth that is the Clean Air Act. Few statutes present more complex problems for the nation's courts than this 120-page treatise designed to safeguard our precious air resources. And, fewer are more important. Indeed, in reaching the proper construction of the Act's requirements we must never forget Congress' aim, universally shared, for a cleaner, healthier environment. At the same time, we remain guided by the fundamental principles of law which give the EPA broad discretion as the guardian of Congress' goal. Our task is not to determine whether the EPA has been the wisest steward but only whether the Agency has violated its legislative mandate, losing sight of the chartered path to the promised land of clean air.

* * *

No aspect of this novel attempt to establish joint state and federal responsibility is more crucial than the provisions which guarantee that air pollution generated in one state does not disrupt another state's plans for complying with the national standards. Indeed, one purpose of the Clean Air Act Amendments of 1977, which further refined the statutory scheme, is to strengthen and clarify EPA's obligation to consider carefully the interstate impact of any revision of a state implementation plan ("SIP"). The 1977 Amendments also outline the type of interstate impacts that are permissible. Petitioners, the State of Connecticut and Connecticut Fund for the Environment ("CFE"), today ask us to determine whether the EPA complied with the stringent requirements of the 1977 Amendments when it approved a revision of New York's state implementation plan allowing five plants owned by the Long Island Lighting Company ("LILCO") to continue burning fuel of 2.8% sulfur content in Suffolk County, New York.

Our careful analysis of petitioners' challenges to EPA's action leads us to conclude that the Agency has indeed satisfied these rigorous conditions.

I

This case reaches us after a somewhat intricate procedural and factual history. Its roots stretch at least as far back as July 20, 1976 when the EPA approved a one-year temporary special limitation in New York's state implementation plan permitting the use of 2.8% sulfur content fuel at LILCO's Port Jefferson Generating Facility units 3 and 4 and 2.5% at Northport Generating Facility units 1-3. 40 C.F.R. § 52.1670(c)(30)(31) (1981). New York's overall environmental regulatory scheme generally authorizes the burning of only 1% sulfur content fuel in Suffolk County, but it also explicitly provides for such special limitations when granted by New York's Commissioner of Environmental Conservation and approved by the EPA. N.Y. Admin. Code Tit. 6, §§ 225.1-225.2 (1979). In 1977 EPA approved a three-year extension of LILCO's special limitation which permitted the burning of 2.8% fuel at all five plants. 40 C.F.R. § 52.1670(c)(33) (1981). This extension expired on May 31, 1980.

Limits on the sulfur content in fuel are designed chiefly to minimize levels of sulfur

dioxide ("SO₂") in the surrounding air. See *Connecticut Fund for the Environment v. EPA*, 696 F.2d 169 (2d Cir. 1982) ("*Connecticut Fund II* "). . . . [H]owever, percentage requirements for sulfur in fuel also help place a ceiling on the amount of total suspended particulates ("TSP") which a fuel burning source, such as a power plant, emits into the atmosphere. The State of Connecticut's and CFE's challenge to EPA's approval of New York's decision to continue permitting LILCO to burn higher sulfur content fuel centers on possible increased concentrations of these two pollutants in Connecticut's air. We note at the outset, however, that because this case involves a continuation of existing practice rather than permission to increase the sulfur content of fuel, no new or additional pollution will result from the challenged Agency action.

New York's Department of Environmental Conservation ("DEC") first made clear its intention to extend LILCO's special limitation beyond the May 31, 1980 deadline in a report dated January 14, 1980. The DEC evaluation, produced following LILCO's November 1979 request for an extension and its submission of data, indicated that continued burning of 2.8% sulfur fuel at Port Jefferson and Northport would not cause a violation of the national ambient air quality standards ("NAAQSs") for sulfur dioxide in New York. This original report did not consider the effect of LILCO's emissions on Connecticut or the impact of those emissions on either state's efforts to comply with the NAAQSs for total suspended particulates.

* * *

On July 3, 1980 EPA published its proposed approval of DEC's request to extend LILCO's special limitation, and invited public comments on whether the extension should be approved. 45 Fed. Reg. 50,832 (1980). The notice directed the public to the rules, set forth in § 110(a)(2)(A)-(K), governing the EPA's decision to approve or disapprove revisions of state implementation plans. These rules apply in this case since New York's approval of LILCO's special limitation is a revision of New York's EPA approved SIP.

In direct response, the State of Connecticut filed comments on August 29, 1980 alleging that Agency approval of New York's proposal would violate § 110(a)(2)(E). This provision establishes guidelines EPA must use in assessing the interstate impact of any state's proposed revision of its state implementation plan. In sum, Connecticut argued that New York's proposal to allow LILCO to continue burning high sulfur fuel would sufficiently harm Connecticut's air so as to violate the Clean Air Act. We will discuss this argument in detail in Part II of our opinion.

In a separate proceeding, Connecticut also petitioned the EPA on August 28, 1980, pursuant to § 126 asking the Agency to find that under New York's proposal, LILCO's emissions would contravene § 110(a)(2)(E)(i) by "preventing the attainment and maintenance" of the NAAQSs in Connecticut. Section 126, added to the Clean Air Act by the 1977 Amendments, extends to states the right to bring such petitions and requires the EPA to find a violation or deny the petition within 60 days. The EPA held hearings on Connecticut's petition on December 3 and 4, 1980. It has yet to act upon them.

The Agency did, however, investigate Connecticut's allegations. It received additional technical analysis from LILCO and the State of New York concerning the effect of the proposed revision on Connecticut's air. This analysis demonstrated that LILCO's emissions would not cause a violation of the EPA's primary or secondary standards for sulfur dioxide in Connecticut. See *Analyses of Total SO₂ Concentrations At Selected Sensitive Connecticut Locations*, Long Island Lighting Company, April 14, 1981. EPA's evaluation also indicated that burning of 2.8% sulfur fuel at LILCO's plants would create an insignificant impact on concentration levels of total suspended particulates in Connecticut. EPA Technical Support

Document, *supra*. EPA then extended the comment period until June 19, 1981, to allow the public to respond to this new technical material. 46 Fed. Reg. 27,501 (1981). Connecticut submitted supplemental comments on June 17, 1981, again challenging New York's and EPA's conclusions. In its own technical report EPA responded to the various contentions raised by Connecticut and found that LILCO's emissions under New York's proposal would not violate the Clean Air Act. * * *. Accordingly, the EPA, on September 24, 1981, issued a final rule approving LILCO's special limitation which expires on Sept. 24, 1984. 46 Fed. Reg. 47,069 (1981).

On November 12, 1981, the State of Connecticut petitioned this Court for review of the Agency's action pursuant to § 307(b)(1). Connecticut Fund for the Environment filed its petition 11 days later. Both petitions raise various challenges to the propriety of the EPA's decision, many of which were presented by Connecticut in its comments submitted to the EPA. We now turn to these challenges.

* * *

II

* * *

A

Section 110(a)(2)(E)(i)(I) prohibits the EPA from approving a revision of a state implementation plan unless the plan as revised contains provisions which ensure that no fuel burning source will "prevent attainment or maintenance of any. . . national primary or secondary ambient air quality standard in any other state." Nowhere, however, does the statute define the word "prevent." Such a definition is required for two distinct situations. When the affected state *has* attained the national ambient air quality standards ("NAAQSs") for a pollutant, it must be determined when pollution generated in another state will "prevent the maintenance" of that standard. And, when the affected state *has not* attained a standard, we must decide under what circumstances interstate pollution will "prevent the attainment" of that standard. Both situations are relevant here. Connecticut and CFE allege that LILCO's continued burning of 2.8% sulfur fuel will "prevent the attainment and maintenance" of the NAAQSs in Connecticut for both sulfur dioxide and total suspended particulates. Connecticut has attained the NAAQSs for sulfur dioxide. 40 C.F.R. § 81.307 (1981). It *has not* attained the secondary standard for total suspended particulates. 40 C.F.R. § 81.307 (1981).

1. Sulfur Dioxide

A literal reading of the word "prevent" in § 110(a)(2)(E)(i)(I) would require the EPA to approve New York's proposed revision unless petitioners could show that LILCO's emissions would make it impossible for Connecticut to maintain the standards for sulfur dioxide even by imposing stricter control measures upon its own pollution sources. The EPA properly rejected this literal interpretation of the statute.

The legislative history makes clear that the Clean Air Act Amendments of 1977 were designed to ensure that one state would not be able to foist its pollution on another state and accordingly require that state to tighten its regulations to keep its air clean. *See* H.R. Rep. No. 294, 95th Cong., 1st Sess. 329-331, *reprinted in* 1977 U.S.Code Cong.Ad.News 1077, 1408-1410; S. Rep. No. 127, 95th Cong., 1st Sess. 41-42 (1977). Indeed, the 1977 Amendments replaced the earlier provisions of the Clean Air Act of 1970 which only required each state's implementation plan to provide measures for "intergovernmental cooperation." Congress determined that the earlier statute had proved ineffective in solving the difficult problem of interstate air pollution. S. Rep. No. 127, 95th Cong., 1st Sess. 41-42 (1977). It

would be inconsistent with congressional purpose, therefore, for EPA to allow a state to increase its emissions if those emissions would cause a violation of the NAAQSs in another state. Accordingly, EPA concluded that regardless of what further regulations Connecticut might adopt, New York's proposed revision could be approved only if it would not cause a violation of the primary or secondary standards for sulfur dioxide in Connecticut given Connecticut's then prevailing emission limitations on its own sources of pollution. We accept this conclusion as reasonable and consistent with the purposes of the Clean Air Act. See *Connecticut Fund for the Environment v. EPA*, 672 F.2d 998, 1006 (2d Cir. 1982).

Petitioners would apparently have us go farther and interpret § 110(a)(2)(E)(i)(I) as requiring the EPA to disapprove New York's proposed revision even if no violation of the standards would result from LILCO's emissions. They ask us to read the words "prevent the maintenance of any . . . national ambient air quality standard" to mean "have a substantial impact on pollution" in the affected state. We decline to do so. Initially, we have every reason to believe that Congress meant what it said. Absent strong indications to the contrary, the plain language of a statute is the best index of its meaning. *Manchester Environmental Coalition v. EPA*, 612 F.2d 56, 60 (2d Cir. 1979). Moreover, the question of one state's "substantial impact" on air pollution in another state is covered by other sections of the Clean Air Act. Part C of the Clean Air Act, one of the major additions of the 1977 Amendments, is aimed at preventing the significant deterioration of air quality in areas which have attained the national ambient air quality standards. The Agency correctly points out that § 110(a)(2)(E)(i)(II) incorporates the provisions of Part C into this section of the statute, designed to achieve interstate pollution abatement. It is therefore entirely reasonable to assume that Congress intended the incorporation of Part C to ensure that pollution from one state would not unfairly contribute to pollution in another state. Accordingly, the EPA reasonably concluded that § 110(a)(2)(E)(i)(I) was not intended to do more than prohibit the Agency from approving state implementation plan revisions which will cause violations of the NAAQSs in nearby states. The Agency's construction must be upheld where reasonable. *Train v. Natural Resources Defense Council*, 421 U.S. 60, 75 (1975).

Even accepting the EPA's construction, petitioners argue the Agency abused its discretion by concluding that New York's proposed revision would not cause a violation of the NAAQSs for sulfur dioxide in Connecticut. The State of Connecticut and CFE claim the Agency used an improper modeling technique to estimate the effects of LILCO's emissions on Connecticut's air. They further assert that the EPA arbitrarily and capriciously used data obtained at LaGuardia Airport rather than weather readings taken from the closer Bridgeport Airport. Additionally, petitioners contend the Agency abused its discretion by using meteorological data from 1964, by failing to measure the effect of the tall height of LILCO's emissions stacks, and by refusing to take into account a proposed revision in Connecticut's SIP raising from .5% to 1% the permissible percentage of sulfur in fuel burned by pollution sources in Connecticut. See *Connecticut Fund II*. We note initially that EPA carefully considered each of the many technical points raised before approving LILCO's special limitation. Moreover, we stress that while "expertness is not a magic wand which can be indiscriminately waved over the corpus of an agency's findings to preserve them from review," L. JAFFE, JUDICIAL CONTROL OF ADMINISTRATIVE ACTION 613 (1965), this kind of technical decision is particularly within the realm of Agency expertise. See *Mision Industrial Inc. v. EPA*, 547 F.2d 123, 129 (1st Cir. 1976). With these thoughts in mind, we begin our analysis of the petitioners' technical challenges.

a) Modeling

EPA based its conclusion that LILCO's continued emissions would not cause a violation of the NAAQSs for SO₂ in Connecticut on analyses derived from the CRSTER model. Air quality models, like CRSTER, contain a set of mathematical equations used to calculate pollutant concentrations caused by a pollution source's emissions. Using actual data such as meteorological measurements and stack emission characteristics, the modeling analysis predicts concentrations for an array of points at various distances from the plant. The CRSTER, or single source, model estimates the impact on pollution concentration levels by measuring emission levels at a single source and calculating the likely effect of these emissions at various destinations using meteorological data such as wind velocity and direction. *See Guideline on Air Quality Models* (Office of Air Quality Planning and Standards 1.2-080, EPA, April 1978) incorporated by reference 40 C.F.R. § 51.24(k) (1982), (hereinafter "*Guideline on Air Quality Models*" or "*Guideline*"); *see generally Cleveland Electric Illuminating Company v. EPA*, 572 F.2d 1150 (6th Cir.), *cert. denied*, 439 U.S. 910 (1978).

Petitioners challenge the EPA's use of the CRSTER model claiming that it is inadequate to measure the meteorological and terrain complexities created by the flow of air across Long Island Sound from New York to Connecticut. One such problem raised by petitioners is the phenomenon of "fumigation." Fumigation occurs when the stream of air ("plume") carrying emissions from a pollution source comes into contact with a turbulent internal boundary layer of air ("TIBL") created by the temperature differential between warm air over coastal lands and cooler air carried in from the water. The TIBL erodes the plume causing the emissions to disperse over the land mass resulting in higher pollution concentrations at ground level. The Agency itself, however, recognized these problems. In a letter from the EPA's Region II Administrator to the Office of Air Quality Planning and Standards Clearinghouse in North Carolina, the Administrator requested an evaluation to determine the appropriate model to apply to the complexities created by the wind conditions over New York and Connecticut and by Connecticut's high terrain. EPA Technical Support Document, *supra*. The Clearinghouse specifically concluded that the best approach would be to adjust the CRSTER model to account for the complicated terrain. EPA Technical Support Document, *supra*. It rejected the so-called "Valley Model" suggested by the State of Connecticut as well as other proposed alternatives.²⁶ Petitioners have failed to demonstrate that this carefully considered decision constituted an abuse of the Agency's discretion.

CFE alleges that the Agency contravened its own Guideline on Air Quality Models when it decided to rely on the CRSTER model. Petitioner simply misconstrues this Guideline. The Guideline does recommend the CRSTER model for situations where there are no significant meteorological or terrain complexities. Guideline on Air Quality Models § 4.3.1 at 20. It further suggests that where such complexities exist, a model more suitable than the CRSTER model should be applied. Its conclusion, however, is that "*each complex situation be treated on a case by case basis with the assistance of expert advice*" (emphasis added). *Id.* The Guideline further states that "even though specific recommendations are made they should not be considered rigid requirements. The preferred model is that which best simulates atmospheric transport and dispersion in the area of interest." Guideline § 1.0 at 1-2, CFE's

²⁶ The so-called "Valley Model" is designed for situations where emissions arise from low (valley terrain) and impact with rugged terrain such as cliffs and bluffs. It relies on assumed meteorological conditions rather than actual data.

Appendix at 1-2.

The EPA adopted exactly this case-by-case approach. It adjusted the CRSTER model to account for the terrain complexities in Connecticut and provided a detailed technical rationale for the inadequacy of other proposed models. Specifically, the Agency rejected the use of the Valley Model because it remains untested for distances as great as those which the LILCO emissions travel to reach Connecticut. While CFE points to problems with the CRSTER model created by breezes blowing pollution toward Connecticut from the air over Long Island Sound, it offers nothing to indicate that another modeling approach would better account for the overall complex situation. Nor is there the slightest indication that the Agency's reliance on the CRSTER model was arbitrary and capricious. To reject the EPA's conclusion under these circumstances would be to substitute our judgment concerning mathematical modeling techniques for that of the Agency. See *Cleveland Electric Illuminating Company v. EPA*, *supra*, 572 F.2d at 1161. This we cannot do. Accordingly, we conclude that CFE's challenge to the Agency's modeling is without merit.

b) Meteorological Data

Petitioners raise two objections to the meteorological data chosen by the Agency in calculating the effect of LILCO's emissions on Connecticut. They assert that the EPA should have used weather readings from Bridgeport rather than those taken from LaGuardia Airport. They further contend the Agency improperly combined meteorological data from 1964 with figures from 1973-1976. Neither of these Agency actions constituted an abuse of discretion.

The EPA's decision to use data from LaGuardia Airport clearly resulted from a considered judgment based on technical factors. The Agency selected LaGuardia weather readings because that airport is located on the same side of Long Island Sound as the LILCO plants. Wind conditions at LaGuardia, therefore, more closely simulate those at Northport and Port Jefferson. Petitioners correctly point out that the Bridgeport Airport is approximately 10 miles closer to the LILCO plants than LaGuardia, and EPA readily admits that proximity is one factor to be considered in determining the appropriate meteorological data to be utilized. Guideline on Air Quality Models § 5.2 at 31. The Agency concluded, however, that the similarity in wind direction was a more significant factor in identifying the proper data than the proximity of the source. It reached that conclusion because the prevailing wind direction at Bridgeport is precisely opposite that at LILCO's plants, thus seriously undermining the usefulness of Bridgeport data regardless of its proximity. Indeed, given the arguments raised by petitioners themselves concerning the importance of the meteorologically complex air patterns over Long Island Sound, the Agency's decision seems quite sound. In any event, there can be no doubt that this considered weighing of competing factors produced a decision which was rationally based, see *Bowman Transportation, Inc. v. Arkansas Best Freight System, Inc.*, 419 U.S. 281, 290 (1974), and well within the Agency's discretion. See *Mision Industrial, Inc. v. EPA*, *supra*, 547 F.2d at 129.

* * *

c) Stack Height

Petitioners further challenge the Agency's assumptions concerning the height of two of LILCO's stacks. EPA performed its calculations by estimating the height of these stacks at 486 feet rather than using the actual height of 600 feet. CFE correctly points out that the use of the smaller figure produced an inaccurately low prediction of LILCO's impact on Connecticut's air. Taller stacks tend to have a greater impact on pollution levels at more distant locations. LILCO's stacks, therefore, create more pollution in Connecticut because of

that state's distance from the plants.

CFE fails to recognize, however, that the Agency also conducted a supplemental analysis to assess the differential between the predicted impact using the lower estimated figure and the actual stack height. EPA Technical Support Document, *supra*, Memorandum, "Sensitivity Analysis of LILCO's Impacts on Connecticut Based on GEP versus Actual Stack Height Modeling," from Robert Predale to Raymond Werner. The Agency also relied on an analysis submitted by New York's Department of Environmental Conservation which employed actual stack height precisely to calculate a "worst case" scenario. EPA Technical Support Document, *supra*, Memorandum, "Review of the New York State Air Quality Modeling Analysis of LILCO's Impact on Connecticut," from Robert Predale to Raymond Werner. Both these additional studies support the Agency's conclusion that LILCO's emissions would not cause violations of the national ambient air quality standards for sulfur dioxide in Connecticut. Under these circumstances, we conclude that the Agency did not abuse its discretion by partially relying on analysis using estimated stack heights when approving LILCO's special limitation.

* * *

d) Connecticut's Proposed Revision

CFE argues that the Agency abused its discretion by failing to take into account a proposed revision in Connecticut's state implementation plan which would raise the permissible percentage of sulfur in fuel burned in that state from .5% to 1%. EPA proposed that revision for approval, 46 Fed. Reg. 45,738 (Sept. 11, 1981), two weeks before it finally approved LILCO's special limitation, 46 Fed. Reg. 47,096 (Sept. 24, 1981). The short answer to CFE's contention is that no provision in the Clean Air Act requires the EPA to consider the impact of a proposed revision of one state's implementation plan upon a restructuring of the state implementation plan of another state. We do not mean to imply, however, that a situation could never arise where the general scheme of the Clean Air Act would require the Agency to consider the combined effect of two proposed revisions before approving either.

In this case, the Agency did consider the combined effect of both revisions on Connecticut's air before permitting Connecticut to revise its SIP. In our holding in *Connecticut Fund II*, we conclude today that the EPA acted within its discretion when it determined that the combined effects of LILCO's emissions and increased pollution created by the burning of 1% sulfur fuel in Connecticut would cause no violations of the NAAQSs in Connecticut. Accordingly, the Agency's failure to consider Connecticut's revision before approving LILCO's special limitation was at worst harmless error. We hold, therefore, that EPA did not violate § 110(a)(2)(E) when it concluded that New York's proposed revision of its SIP which allowed LILCO to continue burning 2.8% sulfur fuel at Port Jefferson units 3 and 4 and Northport units 1-3 would not "prevent the maintenance" of the national ambient air quality standards for sulfur dioxide in Connecticut.

2. Total Suspended Particulates

The burning of high sulfur fuel at LILCO's Northport and Port Jefferson Plants affects Connecticut's level of total suspended particulates in two ways. The greater sulfur content in the fuel increases the particulate emissions directly pouring out of LILCO's stacks. In addition, sulfur released into the air will under certain atmospheric conditions combine with other airborne molecules to create particulates known as sulfates. Petitioners allege that each of these effects will impermissibly contribute to the already existing violations of the NAAQSs for TSP in Connecticut. More specifically, they claim that EPA violated § 110(a)(2)(E)(i)(I)

when it approved LILCO's special limitation because New York's SIP, petitioners allege, no longer prohibits LILCO from emitting any air pollutant which will "prevent the attainment" of the NAAQSs for TSP in Connecticut.

EPA claims it need not consider the impact of New York's proposed revision on TSP levels in Connecticut. The Agency argues that because limitations on the sulfur content in fuel are part of New York's state implementation plan to control sulfur dioxide, any changes in sulfur regulations require the Agency to examine only the effect on SO₂ levels. In our companion case, *Connecticut Fund II*, we hold today that where the EPA is considering the effect of a proposed revision of a SIP on pollution levels within one state, it may, within the reasonable exercise of its discretion, permit that state to regulate on a pollutant by pollutant basis. Although mindful of the deference to be given to the Agency's interpretation of the statute, we feel we must exercise the utmost caution before extending that ruling to apply to situations like the one presented here where the revision of New York's SIP affects concentration levels of pollutants in another state, namely Connecticut. Indeed the language of the Clean Air Act points toward the opposite conclusion.

Section 110(a)(1) requires each state to adopt and submit to the EPA a state implementation plan for each national ambient air quality standard within nine months of the promulgation of such standard. Section 110(a)(2)(B), a provision involved in our companion case, *Connecticut Fund II*, prohibits the Agency from approving a revision of a state implementation plan unless it contains measures necessary to insure the attainment and maintenance of "such standard" (emphasis added). By contrast, § 110(a)(2)(E)(i)(I) dealing with interstate impacts, forbids EPA approval of a revision of a SIP unless

it contains adequate provisions prohibiting any stationary source [here LILCO's plants] within the state from emitting any air pollutant in amounts which will prevent attainment or maintenance by any other state of *any* such national ambient air quality standard.

(Emphasis added.) Congress's purpose in enacting § 110(a)(2)(E) indicates that this difference in language was probably not a product of inadvertent drafting.

One central focus of the Clean Air Act Amendments of 1977 was to ensure that the EPA would monitor and control the impact of pollution from one state on air quality in another. H.R. No. 294, 95th Cong., 1st Sess. 329-331, *reprinted in* 1977 U.S. Code Cong. & Ad. News at 1408-10; S. Rep. No. 127, 95th Cong., 1st Sess. 41-42 (1977). *See also State of Connecticut v. EPA*, 656 F.2d 902 (2d Cir.1981). Unlike the intrastate effects in *Connecticut Fund II*, which resulted only after Connecticut had the opportunity to choose for itself between different approaches to controlling SO₂ and particulates, here LILCO's emissions, were they to significantly contribute to Connecticut's TSP concentrations, would deprive Connecticut of that flexibility. Allowing one state to foreclose another from exercising the many options available for controlling its pollution problem seems contrary to the congressional intent of strengthening each state's protection against interstate pollution. The use of the word "any" in § 110(a)(2)(E), therefore, seems precisely tailored to require the EPA to consider the effect of a revision of one state's implementation plan upon all NAAQSs in other states. Moreover, the Agency presents no evidence that Congress did not intend these words as written. Accordingly, we have serious difficulty with the EPA's contention that New York is free to revise its SIP for SO₂ without any federal consideration of whether the revision will "prevent the attainment" of the NAAQSs for TSP in Connecticut.

We need not uphold the Agency's argument, however, to conclude that no violation of the Clean Air Act occurred, concerning total suspended particulates, when the EPA approved

LILCO's special limitation. The Agency did, in fact, consider the effect of LILCO's emissions on TSP concentrations in Connecticut, at least to the extent these effects could be measured. The Agency decided that the burning of 2.8% sulfur fuel at Northport and Port Jefferson created an insignificant impact on TSP levels in Connecticut. For the reasons discussed below, we find that the Agency acted well within its discretion in reaching that conclusion.

a) Direct Emissions

The EPA's analysis of LILCO's direct particulate emissions revealed their impact on TSP levels in Connecticut would be minimal. The maximum estimated impact was $0.10 \mu\text{g}/\text{m}^3$ on an annual basis and $2.06 \mu\text{g}/\text{m}^3$ on a 24-hour basis. EPA Technical Support Document, *supra*. This compares to primary NAAQSs of an annual geometric mean concentration of $75 \mu\text{g}/\text{m}^3$ and an average 24-hour second-high concentration of $260 \mu\text{g}/\text{m}^3$. (The secondary NAAQS is an average second high 24-hour concentration of $150 \mu\text{g}/\text{m}^3$) 40 C.F.R. §§ 50.6-50.7 (1982). These low-level impacts are not unexpected. LILCO's stacks are equipped with electrostatic precipitators designed to trap virtually all particulates before they are released. Moreover, LILCO's plants must comply with New York's particulate regulations, which are in fact more stringent than Connecticut's. Although CFE challenges the modeling EPA used to obtain its results, we have previously explained that the Agency acted well within its discretion in rejecting petitioners' reliance on the so-called "Valley Model". Accordingly, we accept the EPA's estimates concerning the direct effect of LILCO's particulate emissions on Connecticut.

In addition, we agree with EPA that these minimal impacts will not "prevent [Connecticut's] attainment" of the NAAQSs for TSP in contravention of § 110(a)(2)(E)(i)(I). The legislative history is again unclear as to the precise meaning of "prevent the attainment" in situations where the affected state has not yet complied with the NAAQSs. See H.R. Conf. Rep. No. 564, 95th Cong., 1st Sess. 145-46, *reprinted in* 1977 U.S. Code Cong. & Ad. News at 1526-27; H.R. Rep. No. 294, 95th Cong., 1st Sess. 329-31, *reprinted in* 1977 U.S. Code Cong. & Ad. News at 1408-10. The Agency suggests that the words of the statute indicate a congressional desire to prohibit revisions to state implementation plans which will "significantly contribute" to already existing violations in other states. The problem with this interpretation, however, is that the statute contains no guidelines as to what would constitute a "significant contribution." Moreover, the 1977 Clean Air Act Amendments unmistakably indicate a strong congressional policy to strengthen the procedure for bringing each state to compliance with the national standards. See H.R. Rep. No. 294, 95th Cong., 1st Sess. 1, *reprinted in* 1977 U.S. Code Cong. & Ad. News at 1079; *see also National Resources Defense Council v. Gorsuch*, 685 F.2d 718 (D.C. Cir.1982). We must tread lightly, therefore, in approving any interpretation of the Clean Air Act which might interfere with the statutory goal of ensuring that each state comply with the NAAQSs as "expeditiously as practicable". See § 172.

On the other hand, nothing in the legislative history indicates that § 110(a)(2)(E)(i)(I) was intended to prevent even minimal impacts upon another state's pollution concentrations simply because that state has not attained the national standards. To adopt this approach would be to hold one state hostage to another's failure to enact the pollution control strategies necessary to conform to the requirements of the Clean Air Act. Moreover, as intervenor LILCO points out, the language of § 110(a)(2)(E)(i)(I) seems to contemplate a standard which would prohibit SIP revisions only if the emissions they permit would in and of themselves prevent a nearby state from attaining the NAAQSs. Accordingly, we cannot reject the Agency's interpretation of the statute in favor of a blanket rule forbidding the EPA from approving any SIP revision

which permits additional amounts of a specific pollutant to be added to concentrations in a nearby state which has not attained the NAAQSs.

At the same time, the facts of this case do not require us to conclusively adopt the Agency's suggestion that § 110(a)(2)(E)(i)(I) prohibits only those SIP revisions which will "significantly contribute" to pollution concentrations in the affected state. We hold only that where the impact upon a nearby state of another state's revision of its SIP is shown by the Agency to be so insignificant as to be fairly described as minimal, the EPA may approve that revision even where the affected state is not in compliance with the NAAQSs. *See Alabama Power Co. v. Costle*, 636 F.2d 323, 360-61 (D.C. Cir. 1979). Here the estimated maximum impact of 2.06 µg/m³ is less than 1.5% of even the secondary NAAQS. Because this impact is truly minimal, we conclude that the EPA did not violate § 110(a)(2)(E)(i)(I) when it determined that LILCO's direct particulate emissions would not "prevent the attainment" of the NAAQSs for TSP in Connecticut.

b) Sulfate Formation

Connecticut and CFE vigorously contend that even if the direct particulate emissions from LILCO's plants will not prevent the attainment of the NAAQSs for TSP in Connecticut, the indirect formation of sulfates will. The possibility does exist that higher sulfur emissions will react with other elements in the atmosphere to create dangerous particulates called sulfates. The short answer to petitioners' contention, however, is that the EPA, as yet, has no adequate model to predict the likelihood of that possibility. *See Guideline on Air Quality Models* (1978). Because of the severe health dangers associated with high concentrations of suspended sulfates,⁴¹ we can reasonably expect that the Agency will continue to strive towards developing techniques capable of measuring the degree of risk posed by sulfate formation. A time may come, therefore, when the Agency will establish NAAQSs for sulfates and when all SIP revisions will be evaluated for their likely impact on sulfate levels. Alternatively, the Agency may take so long to address, or at least measure, the sulfate problem that any further delay could be found to be an abuse of discretion. Until that time, however, it can hardly be said that the Agency's failure to consider an effect it cannot measure constitutes a violation of the Clean Air Act. *See Mission Industrial, Inc. v. EPA*, *supra*, 547 F.2d at 131.

Connecticut and CFE argue that the Agency's inability to measure sulfate formation is insufficient to justify its refusal to at least approximate likely sulfate impacts. Two additional technical factors, however, support EPA's unwillingness to guess at the indirect impact of LILCO's emissions on Connecticut. Initially, the Agency was aware that during the winter periods when sulfate levels in Connecticut posed the greater threat, the wind direction was least likely to blow LILCO's emissions toward Connecticut. In addition, the Connecticut Department of Environmental Protection measured sulfate levels in Connecticut and found them to be relatively homogeneous thus indicating that sulfates in Connecticut's atmosphere probably traveled from points farther away than LILCO's plants. Particularly when faced with these two indications that sulfate levels in Connecticut were not a product of LILCO's emissions, the EPA reasonably concluded that it need not consider the possibility of sulfate formation which the Agency itself could not satisfactorily measure. *See Mission Industrial Inc. v. EPA*, *supra*, 547 F.2d at 131. Accordingly, the Agency did not violate § 110(a)(2)(E)(i)(I)

⁴¹ These dangers include higher mortality rates, aggravation of heart and lung disease in the elderly, aggravation of asthma, excess risk of acute lower respiratory disease in children and excess risk of bronchitis.

when it made no specific estimate of the impact of LILCO's emissions on sulfate formation in Connecticut.

Our analysis of each of petitioners' challenges, therefore, reveals that the Agency did not abuse its discretion by concluding that LILCO's burning of 2.8% fuel at Northport and Port Jefferson will not prevent the attainment or maintenance of the NAAQSs in Connecticut.

* * *

The petitions for review are denied.

NOTES

1. In the 1990 Amendments, § 110(a)(2)(E) was moved to § 110(a)(2)(D) and altered slightly. Instead of "prevent[ing] the attainment or maintenance" of the NAAQS, the law now prohibits a State from "contribut[ing] significantly to nonattainment in, or interfer[ing] with maintenance by any other State" with respect to NAAQS. How might this change have altered the analysis in the *Connecticut* case?

2. Although not at issue in the principle case, the court notes that Connecticut, in a separate *administrative* proceeding, had petitioned EPA under § 126(b) of the Act for a finding similar to that which it sought in the judicial proceedings; that is, that the LILCO plants were preventing Connecticut from maintaining compliance with the NAAQS for SO₂. The court's decision effectively resolved this petition against Connecticut. Note, however, that § 126(b) requires the Administrator to act within 60 days after receipt of the petition. In this case, the petition was filed on August 28, 1980 and had not been decided at the time for the court's decision in 1982. Compare *Air Pollution Control District of Jefferson County, Kentucky v. EPA*, 739 F.2d 1200 (6th Cir. 1984), *infra*. (An inordinate delay of 22 months in acting on a § 126 petition did not justify granting the petition unless the delay was arbitrary and capricious.)

3. Shortly after the Second Circuit had decided the *Connecticut* case, New York found itself on the other side of a similar controversy. In *New York v. EPA*, 710 F.2d 1200 (6th Cir. 1983), the State of New York challenged, among other things, Tennessee's application for a revision to its SIP to allow an increase in SO₂ emissions from its Kingston power plant. New York made two principal arguments in its challenge to EPA's approval of the Tennessee SIP revision: (1) that EPA had failed to assess the cumulative impacts of the emissions allowed by the Tennessee SIP on the SIPs of other states; and (2) that EPA had failed to determine the impact of the plant emissions on the formation of suspended sulfate particulates in other states. Both issues, of course, had been decided in New York's favor by the Second Circuit, but in a manner contrary to New York's position before the Sixth Circuit. The Sixth Circuit followed the Second Circuit's lead in dismissing New York's claims. *Id.* One significant distinction between the two cases, however, should be noted. In the *New York* case the state had, like Connecticut, filed a petition under § 126(b) of the Act. The New York petition, however, was considerably broader than its challenge to the Tennessee SIP revision. Indeed, it encompassed proposed revisions to seven other SIPs involving 17 large Midwestern power plants. The court found that while EPA need not consider the cumulative impacts of the various plants prior to its approval of the Tennessee SIP revision, it should consider those impacts in its review of New York's § 126(b) petition. Can a state circumvent the restrictions imposed by the courts on cumulative analysis merely by filing a comprehensive petition under § 126(b)?

4. At one point in its opinion, the court states that “no provision in the Clean Air Act requires the EPA to consider the impact of a proposed revision of one state’s implementation plan upon a restructuring of the state implementation plan of another.” Read § 110(a)(2)(D). Do you agree that it does not require an analysis of the cumulative effects of revisions to state SIPs?

5. The Supreme Court has ruled that mutually exclusive permit applications for radio broadcast licenses must be considered together in order to ensure that granting one license will not deprive the other applicant of a fair hearing. *Ashbaker Radio Corp. v. FCC*, 326 U.S. 327 (1945). The *Ashbaker* doctrine has been applied to a host of other situations involving mutually exclusive permits or licenses. See BERNARD SCHWARTZ, ADMINISTRATIVE LAW, § 6.2 (2d ed. 1984). Should the doctrine have been applied to the New York and Connecticut SIP revision proposals?

6. Despite the acknowledged health dangers associated with suspended sulfates the court refused to require EPA to consider the sulfate particulates contributed from LILCO’s emissions to Connecticut’s air. The basis for the court’s action was the lack of an adequate model to predict their occurrence. 696 F.2d at 147. Does the lack of an adequate model justify EPA’s refusal to regulate? Is it consistent with EPA’s obligation to set the primary health-based standards “allowing an adequate margin of safety”? § 109(b)(1).

7. Consider the problem of interstate competition for pollution rights in the context of the *Connecticut* case. The New York SIP had a standard requirement allowing facilities in Suffolk County to burn fuel with one percent or less sulfur content. Exemptions, however, were granted for two units at LILCO’s Port Jefferson facility and for three units at LILCO’s Northport Generating facility which allowed fuel with a 2.8 percent sulfur content. By contrast, Connecticut’s SIP had required its facilities to burn fuel with 0.5 percent sulfur content or less. Eventually, however, Connecticut succumbed to the competitive pressure, and in November, 1981, after LILCO’s special limitation was extended, Connecticut amended its SIP to allow 1.0 percent sulfur content fuel. Connecticut’s amended SIP was upheld in *Connecticut Fund for the Environment v. EPA*, 696 F.2d 169 (2d Cir. 1982), which was decided on the same day as the *Connecticut* case.

8. Competition among the states to attract new industry must surely discourage states like Connecticut from maintaining higher regulatory standards than their neighbors. As one might expect, high sulfur fuel is less expensive than low sulfur fuel. Moreover, EPA policy, approved by the court in the *Connecticut* case, appears to give priority to the first polluting state: “EPA concluded that regardless of what further regulations Connecticut might adopt, New York’s proposed revision could be approved only if it would not cause a violation of the primary or secondary standards for sulfur dioxide in Connecticut *given Connecticut’s then prevailing emission limitations* on its own sources of pollution.” (Emphasis added.) 696 F.2d at 156. What arguments can you make against such a policy?

9. In *Illinois v. City of Milwaukee*, 406 U.S. 91, 107 (1972) the Supreme Court recognized a common law right of action by the State of Illinois against the City for its discharge of sewage into Lake Michigan. In its decision, the Court held that “a state . . . may well ask that its strict standards be honored and that it not be compelled to lower itself to the more degrading standards of a neighbor.” To what extent does the *Connecticut* decision undermine this pronouncement?

10. Should the courts (or the Congress) devise a system of equitable apportionment of pollution rights in a manner similar to the way in which the Supreme Court has apportioned

water rights in various states? *See e.g., Nebraska v. Wyoming*, 325 U.S. 589 (1945). Consider this notion in the context of the following case.

**AIR POLLUTION CONTROL DISTRICT OF
JEFFERSON COUNTY, KENTUCKY V. EPA**

739 F.2d 1071 (6th Cir. 1984)

ENGEL, Circuit Judge.

The Air Pollution Control District of Jefferson County, Kentucky, seeks review of an order of the Environmental Protection Agency ("EPA"), reported at 47 Fed. Reg. 6624 (Feb. 16, 1982). That order denied Jefferson County's petition for interstate pollution abatement, filed pursuant to section 126 of the Clean Air Act. Jefferson County sought relief upon its claim that the Gallagher Power Station ("Gallagher") in southern Indiana emits air pollutants in violation of section § 110(a)(2)(E)(i) of the Act. In that connection, Jefferson County sought a reduction of sulfur dioxide ("SO₂") emissions from the Gallagher generator. The County claimed that Gallagher's SO₂ emissions violated the provisions of the Clean Air Act which prohibit emissions in one state that prevent the attainment or maintenance of national ambient air quality standards ("NAAQSS") in another state. *Id.* Jefferson County also maintained that Gallagher's emissions interfered with the margin for future industrial growth that the County had sought to create by placing strict controls on the emission of SO₂ by Kentucky sources.

The EPA denied Jefferson County's section 126 petition for interstate pollution abatement because it found that Gallagher did not "substantially contribute" to the violation of NAAQSS in Jefferson County.

* * *

**II. REGULATORY BACKGROUND AND
PROCEEDINGS BEFORE THE EPA**

Jefferson County, Kentucky, and Floyd County, Indiana, share a common boundary on the Ohio River. The City of Louisville is located in the northwest portion of populous Jefferson County. In contrast, Floyd County is relatively undeveloped. However, since Jefferson County and Floyd County draw on the same air resources, they, along with Clark County, Indiana, were designated by the EPA as the Louisville Interstate Air Quality Control Region. 40 C.F.R. § 81.35 (1982).

Because the structure of the Clean Air Act is state-oriented, each state is charged with implementing national clean air standards within its own political boundaries. Thus, although Floyd County and Jefferson County are in the same air quality control region, each county is subject to the implementation plan adopted by its respective state. Initially this was not a problem, since Indiana and Kentucky had adopted identical emission limitations for the pollutant at issue in this case, SO₂.

On May 14, 1973, EPA approved Indiana's SIP for Floyd County. This regulatory scheme set an emission limitation for the Gallagher Power Station of 1.2 pounds of SO₂ per million British Thermal Units ("lbs/MBTU") of heat input. Gallagher is situated less than a mile from the Indiana-Kentucky border and is the largest producer of SO₂ in Floyd County. In 1972, the EPA had approved Kentucky's SIP which set emission limitations of 1.2 lbs/MBTU of SO₂ for the major sources in Jefferson County: three power plants owned by

Louisville Gas and Electric.

This uniformity of emission limitations in Floyd County and Jefferson County did not last long. In 1974, Indiana adopted new SO₂ regulations for Floyd County that completely exempted Gallagher from the 1.2 lbs/MBTU emission limitation, though the plant was required to keep on hand a two week supply of low-sulfur fuel should atmospheric conditions require lower SO₂ emissions. At first the EPA proposed to disapprove Indiana's regulation. However, when Indiana submitted technical data which showed that exempting Gallagher from limitations on the emission of SO₂ would not interfere with the attainment and maintenance of SO₂ standards in either Indiana or Kentucky, the EPA approved the regulation. 41 Fed. Reg. 35,676 (Aug. 24, 1976). In 1979, Indiana submitted a revision of the SO₂ portion of its SIP to the Agency. The new plan established an emission limitation for SO₂ of 6 lbs/MBTU heat input for most Indiana power plants, including Gallagher. This 6 lbs/MBTU limitation represents the amount of SO₂ currently emitted by the Gallagher plant without any controls; thus, the new "limitation" effectively maintains the status quo of uncontrolled SO₂ emission at Gallagher. On May 26, 1982, EPA proposed to approve the 6 lbs/MBTU limit with respect to the primary NAAQSs in Floyd County, but to disapprove it as to the secondary NAAQS. 47 Fed. Reg. 22,976.

Meanwhile, in Jefferson County the 1.2 lbs/MBTU emission limitation was generally enforced. In 1975 Louisville Gas and Electric negotiated consent orders whereby final compliance with the 1.2 lbs/MBTU limitation would be delayed until 1985. However, even with strict emission limitations, Jefferson County has yet to attain the NAAQSs for SO₂, and on February 23, 1978, Jefferson County was designated a Part D non-attainment area for both primary and secondary standards. 43 Fed. Reg. 8964 (Mar. 3, 1978); 40 C.F.R. § 81.318 (1983).

It can therefore be seen that a significant disparity exists between the permissible emission limits of power plants in Jefferson County, Kentucky, and the Gallagher plant in Floyd County, Indiana. Louisville Gas and Electric, the primary producer of SO₂ in Jefferson County, spent approximately \$138 million installing scrubbers to remove SO₂ from its emissions, while across the river, Gallagher's SO₂ emissions were completely uncontrolled.

On May 14, 1979, the Air Pollution Control District of Jefferson County filed a petition for interstate pollution abatement under section 126 of the Clean Air Act. The petition requested that EPA find (1) that SO₂ emissions from Gallagher are preventing attainment and maintenance of the NAAQSs for SO₂ in Jefferson County and (2) that once Jefferson County attains the NAAQSs for SO₂, Gallagher's emissions will interfere with Jefferson County's efforts to prevent significant deterioration of air quality under Part C of the Act. The petition sought tighter controls on Gallagher's SO₂ emissions.

* * *

... EPA calculated that only about three percent of the SO₂ concentration at any location in Jefferson County where the NAAQSs are violated is attributable to Gallagher. However, an EPA modeling study also stated that:

The highest second-highest predicted impact on a 24-hour average in Kentucky from Gallagher is 126 µg/m³ [micrograms per cubic meter], which is about 34.5% of the primary NAAQS. This is a substantial portion of the NAAQS and has the potential to limit the increment available to new sources in Louisville. The highest second-highest predicted 3-hour concentration in Kentucky resulting from the plant is 608 µg/m³. This represents 47% of the secondary NAAQS, and has a far more serious potential for limiting growth in Kentucky.

In fact, the EPA's study concluded that by 1985 Gallagher's emissions "will be the predominate [sic] influence upon air quality in Louisville, Kentucky."

Notwithstanding these determinations, the EPA, on February 16, 1982, finally denied Jefferson County's section 126 petition for interstate pollution abatement. 47 Fed. Reg. 6624. The EPA concluded that "the Gallagher plant does not cause or substantially contribute to a violation of the SO₂ NAAQS." *Id.* at 6628. It is from this decision that the Air Pollution Control District of Jefferson County appeals.

* * *

IV. SUBSTANTIVE ISSUES

* * *

B. Fairness and Uniformity in Criteria: Section 301(a)(2)(A)

Jefferson County argues that the EPA denied the section 126 petition without considering the "interstate inequities" that the interstate pollution provisions were designated to eliminate. One aspect of this argument concerns § 301(a)(2)(A) which states:

2) Not later than one year after August 7, 1977, the Administrator shall promulgate regulations establishing general applicable procedures and policies for regional officers and employees (including the Regional Administrator) to follow in carrying out a delegation under paragraph (1), if any such regulations shall be designed—

(A) to assure fairness and uniformity in the criteria, procedures, and policies applied by the various regions in implementing and enforcing the chapter. . . .

Although its argument is rather vague, the County apparently reads section 301(a)(2)(A) as providing specific protections against "interstate inequities." In the County's view, inequities arise in the present case because the EPA has approved SO₂ emission limitations for Gallagher that are very different from the limitations set for Kentucky sources.

* * *

[W]e are unable to agree that section 301(a)(2)(A) can be so applied. Section 301 generally relates to administration and the procedures to be followed by EPA employees in carrying out a delegation of authority from the Administrator. There is simply no indication in the statute that section 301(a)(2)(A) establishes a substantive standard which requires similar or uniform emission limitations for all sources within a particular area as part of a section 126 determination.

* * *

C. The "Margin For Growth" Argument.

Jefferson County asserts that Kentucky's SIP was designed to create a margin of clean air in Jefferson County by setting stringent emission standards that would leave the air cleaner than the NAAQSs require. Creation of this margin of clean air would allow further industrial growth in Jefferson County without the NAAQSs being violated. Since the operation of Gallagher without controls could in certain parts of Jefferson County contribute 47% of the secondary NAAQS for SO₂, the County contends that the margin for growth contemplated by the Kentucky SIP has been stolen by Gallagher to the economic disadvantage of Jefferson County. The County also seems to contend that once it attains the secondary NAAQS for SO₂, Gallagher's emissions will interfere with future measures to prevent significant deterioration of air quality in Jefferson County. Presently, no such measures are in place, since the County has not achieved the NAAQSs for SO₂.

The EPA's response to this "margin for growth" argument was seemingly inconsistent.

Initially, in its notice of the proceedings on Jefferson County's section 126 petition, the EPA interpreted the interstate pollution abatement provisions as prohibiting interference with another state's margin for growth:

The Agency considers that the degree of protection afforded by the interstate pollution provisions includes not only protection against NAAQS violations, but also protection against unreasonable interference with a maintenance program or margin for growth in the SIP. In reaching this conclusion, the Agency has reviewed the interstate pollution provisions of the Act, including Sections 101, 110, 126 and 301, their legislative history and pertinent case law. The Agency is of the opinion that these provisions evidence Congressional intent to protect against unreasonable interstate interference with State programs to maintain the NAAQS and create margins of growth, as well as efforts to attain the standards, prevent significant deterioration of air quality and protect visibility. Such efforts may include State adoption of emission limitations that are more stringent than needed to attain Federal standards. In addition, the Agency believes that the provisions are designed to protect against interstate interference with State or local ambient air standards or other measures more stringent than necessary to attain Federal standards. *See*, H.R. Rep. No. 93-294, 95th Cong., 1st Sess., May 12, 1977, 331, n. 14, U.S.Code Cong. & Admin. News 1977, p. 1077.

45 Fed. Reg. 17,048, 17,049 (Mar. 17, 1980). The EPA also solicited comments from interested parties on whether Gallagher has "a substantial adverse impact on Kentucky's or Jefferson County's efforts to develop a State Implementation Plan which will attain and maintain standards or *create a margin for future growth* for NAAQS or PSD purposes." *Id.* (emphasis added). Thus, at the outset, the EPA suggested that the Clean Air Act permits states to reserve to themselves a margin for growth.

However, when the EPA rendered its final determination on Jefferson County's section 126 petition, the "margin for growth" argument was rejected. In referring to the problem of Gallagher consuming Jefferson County's future PSD increment, the EPA stated:

Comment. One commentator objected to EPA's proposed finding that emissions from Gallagher do not interfere with PSD provisions and urged the Administrator to make a finding on the plant's potential impact on future PSD requirements in Jefferson County.

Response. Jefferson County is a nonattainment area for SO₂, and the PSD regulations are not applicable. Consequently the Gallagher plant cannot interfere at this time with PSD requirements in Jefferson County. Section 126 only prohibits interference with PSD measures required by the Clean Air Act, and therefore EPA need not review possible future impacts on regulations not yet in place. *See State of Connecticut v. EPA*, 656 F.2d 902 [2d Cir.1981]. Furthermore, Gallagher's emissions will not consume any future PSD increment since its emissions at the time the baseline date is set will be included in the baseline air quality in Jefferson County.

47 Fed. Reg. 6624, 6627 (Feb. 16, 1982).

* * *

... Clearly, the EPA's final position on the "margin for growth" issue was markedly different from that first taken in the notice of hearing. However, for several reasons, we are disinclined to hold that it was improper for the EPA to reconsider and revise its initial

assessment of the protections which the Clean Air Act affords to state efforts to maintain a margin for growth.

In our view a notice of hearing simply is not, and should not be treated as, a vehicle for final agency pronouncements on sophisticated matters of statutory interpretation. * * * Unlike a final agency determination, which is the product of careful consideration of all the evidence, a notice of hearing is necessarily issued without input, and consequently it would be inappropriate to treat it as though it were an irrevocable pronouncement or rule. There is great value in encouraging candor in the framing of notices, inasmuch as this assists the parties in preparing for the hearing.

* * *

The EPA contends that it is irrelevant to the petition brought by Jefferson County under section 126 whether Gallagher infringes on the margin for growth which the County asserts it needs for future industrial development. By utilizing section 126 to prevent upwind states from contributing SO₂ to air that is cleaner than the NAAQSs require, the County is in effect attempting to establish a local air quality standard that is more stringent than the national standard. The EPA argues that the literal language of sections 126(b) and 110(a)(2)(E), indicates that interstate pollution is prohibited only insofar as it prevents another state from attaining or maintaining "any such *national* primary or secondary ambient air quality standard." § 110(a)(2)(E)(i) (emphasis added).

* * *

Upon consideration of the statute and the relevant case law, we cannot say that the EPA's determination that the Act does not protect future margins for growth is unreasonable. Since Jefferson County has yet to achieve the NAAQSs for SO₂, any "interference" by Gallagher with the asserted margin for growth is necessarily conjectural. Also, the literal language of § 110(a)(2)(E) supports the EPA's interpretation.

* * *

D. The "Substantial Contribution" Test.

A major objective of the Clean Air Act Amendments of 1977 was to deal with the problem of interstate air pollution, which Congress believed had been inadequately addressed by the 1970 Act. Congress amended section 110 of the 1970 Act to require the Administrator, before approving any SIP or portion thereof, to determine that it contains adequate provisions (i) prohibiting any stationary source within the State from emitting any air pollutant in amounts which will

- (I) prevent attainment or maintenance by any other State of any such national primary or secondary ambient air quality standard, or
- (II) interfere with measures required to be included in the applicable implementation plan for any other State under part C to prevent significant deterioration of air quality or to protect visibility. . . .

§ 110(a)(2)(E). Section 126, also added by the 1977 amendments, requires states in developing implementation plans to identify existing and proposed sources of pollution that may significantly affect the air quality of neighboring states and to provide notice of this information to the states. Section 126 further provides that neighboring states may petition the Administrator for a finding that a major source emits or would emit any air pollutant in violation of the prohibition of section 110(a)(2)(E)(i). The question which has plagued the EPA and reviewing courts since that time is, assuming that no upwind state can transmit utterly pure air to its neighbor, how much pollution is too much under the Act?

If the 1977 amendments to the Act have in fact added to the interstate pollution abatement authority of the EPA, and to the ability of states to seek relief from interstate air pollution, the Act has done little to provide guidelines for the equitable allocation of the burden of reducing interstate pollution. The problem is far more complex than it may at first seem and does not consist solely, or perhaps even primarily, of limiting the emissions of upwind stationary sources. The intractable nature of the problem is well described in a law review comment:

Interstate equity requires that the burden of reducing interstate pollution be allocated fairly among the states involved. Some of the factors that must be considered in defining interstate equity are whether existing or new sources are involved, whether the source state's SIP contains stringent or lax emission standards, whether emission standards are being violated in the source state, the extent to which sources in the receiving state contribute to NAAQS non-attainment there, and whether the contributions by sources in the receiving states are due to violations of emissions standards or to lax standards. The number of factors to be considered and their complex interactions demonstrate that no simple definition of interstate equity is likely to be satisfactory.

If interstate pollution would arise with respect to a proposed new source, EPA can simply prevent construction of that source. Recently EPA issued an interim policy for new sources that allows each state to consume only half of the increment that exists at the state line. This interim policy is an initial step toward defining interstate equity, but it involves only the relatively easy case of sources that have not yet been constructed.

Achieving interstate equity when interstate pollution is emitted by existing sources presents a greater problem. Usually non-attainment in the receiving state will be due to emissions from sources inside that state, in addition to the interstate pollution. If both states have SIP's adequate to attain the NAAQS's, and the non-attainment is because of SIP violations in the source state or both states, then SIP enforcement is all that is necessary. But if all sources in the interstate areas are in compliance with their states' emission standards, the issue becomes more complex especially if one state's emission standards are more lenient than the other's.

Perhaps interstate equity requires each state's emission standards to be identical for like sources. However, such a definition would not necessarily apportion the abatement burden equitably in an interstate region if one state has larger, more numerous, or different types of contributing sources than the others. Alternatively, interstate equity may require that economic impacts for each state be the same. If so, further problems arise in measuring the economic impact in each state, and in allocating that impact within each state.

Silverstein, *Interstate Air Pollution: Unresolved Issues*, 3 HARV. ENVTL. L. REV. 292-93 (1979) (citations omitted).

Perhaps the most hotly debated issue in these proceedings is the standard to be applied by the Administrator in interpreting § 110(a)(2)(E)(i). This section establishes the circumstances under which the interstate pollution abatement provisions of the Clean Air Act are triggered: interstate pollution is forbidden if it will "prevent attainment or maintenance" of the NAAQSs. Under the broad interpretation of section 110 urged by Jefferson County, the Act would prohibit nearly all interstate pollution. On the other hand, a narrow reading of the same section would allow only the most extreme instances of interstate pollution to come under scrutiny.

When it denied Jefferson County's petition, EPA interpreted the "prevent attainment or maintenance" language of section 110 to mean that an interstate polluter, here Gallagher, must "cause or substantially contribute" to a violation of a NAAQS in another state before the pollution abatement provisions are triggered. 47 Fed. Reg. 6624, 6628 (Feb. 18, 1982). According to this interpretation, a section 126 petition may not be granted unless there is (a) a violation of the NAAQSs in one state and (b) pollution emissions in another state which substantially contribute to the violation. Jefferson County particularly objects to the use of the term "substantial contribution," describing it as "an unduly restrictive approach" which fails to consider the equitable elements of the Clean Air Act.

Essentially, Jefferson County's objection concerns the meaning of the word "prevent" in section 110(a)(2)(E)(i). Since the Clean Air Act itself offers no guidance as to what levels of pollution "prevent attainment and maintenance" of the NAAQSs, this language is open to differing interpretations. The County disagrees with the EPA's conclusion that, since only about three percent of the pollutants in areas which violate the SO₂ NAAQSs in Kentucky are attributable to Gallagher, the plant does not "prevent attainment or maintenance" of the NAAQSs in Jefferson County. The County asserts that in effect the EPA has amended section 126 of the Act by adding a requirement that there be a showing that a polluting state "substantially contributes" to a violation of the NAAQSs in the downwind state before a section 126 petition can be granted. The County urges an approach whereby any contribution by a polluting state to a NAAQS violation in a receiving state would be forbidden under section 126: "If the sending state contributes 100% to a problem, then it will be required to contribute 100% of the solution. If the contribution is 1%, then the solution is 1% and any amounts in between."

* * *

Upon examining the language of the Clean Air Act, we believe that the test probably intended by Congress is whether one state "significantly contributes" to NAAQS violations in another state. Although this test is not specifically incorporated into the statute, we do find reference to the phrase in section 126(a), of the Act, which requires written notice to nearby states of interstate pollution. This new section of the Act provides that all nearby states are entitled to notice of any proposed new or modified source of pollution "which *may significantly contribute* to levels of air pollution in excess of the national ambient air quality standards in any air quality control region outside the state in which such source intends to locate (or makes such modifications)." *Id.* (emphasis added). Since the purpose of written notice is to enable affected states to take action, it seems logical to infer that in enacting section 126, Congress intended to prohibit interstate pollution which does or will "significantly contribute to levels of air pollution in excess of the national air quality standards." We do not believe that Congress intended to prohibit even *de minimis* contributions by one state to NAAQS violations in another state because such a policy would in effect "hold one state hostage to another's failure to enact the pollution control strategies necessary to conform to the requirements of the Clean Air Act." *Connecticut v. EPA*, 696 F.2d 147, 164 (2d Cir. 1982).

Having concluded that the proper test to be applied in evaluating the section 126 petition is whether Gallagher's emissions "significantly contribute" to NAAQS violations in Jefferson County, we must ascertain whether the EPA was correct in its determination that Gallagher's emissions are permissible. The EPA performed extensive modeling studies of the effect of Gallagher's emissions and found that Gallagher contributed only about three percent of the

pollutants in areas of Jefferson County that violate the NAAQSs. The EPA determined that Gallagher does not “substantially contribute” to NAAQS violations in Jefferson County and that consequently, section 126 does not require pollution abatement. For the purposes of this opinion, we decline to delve into the semantic distinctions between “substantial” and “significant” and choose to treat the terms as having the same meaning. We are convinced that the broad deference which we are statutorily required to accord to the findings of the Agency preclude our disturbing the EPA’s determination, at least absent any other criteria established by the EPA, or found elsewhere in the Act, that would require a different result. Jefferson County points to the fact that, although Gallagher may contribute only three percent to actual NAAQS violations, Gallagher contributes a substantially greater percentage of the pollutants present in parts of the County where the NAAQSs are not violated. However, § 110(a)(2)(E) appears to contemplate interstate pollution abatement actions only where interstate emissions prevent attainment of the NAAQSs, *i.e.*, only where the standards are violated. Thus, we believe that the EPA did not err in denying Jefferson County’s section 126 petition.

V. CONCLUSION

In a most practical sense, Jefferson County’s concerns are understandable. There would appear to be a patent unfairness in an Agency policy which would tolerate so much higher a level of SO₂ emissions in one area than in another, especially given the high costs which Jefferson County has already incurred to reduce its own pollution. Nevertheless, we believe that the construction placed upon the statute by the EPA appears to be literally correct, even though arguably at odds with the important policy values represented by the 1977 amendments.

* * *

The petition for review of the Agency’s final determination to deny Jefferson County’s section 126 petition is denied.

NOTES

1. Does the Sixth Circuit agree with the Second Circuit’s construction of “prevent attainment or maintenance” as that phrase is used in former § 110(a)(2)(E)(i) of the Act?

2. The Sixth Circuit endorses the Second Circuit’s “first in time, first in right” interpretation of §§ 110(a)(2)(D) (formerly § 110(a)(2)(E)), and 126 of the Act. Thus, it allows the upwind state, Indiana, to use as much of the remaining SO₂ increment of another as is available. Indeed, it can cause another state to exceed the NAAQS, so long as its contribution is not “substantial”, and it can do so with no air pollution controls whatsoever. How does the court respond to Jefferson County’s complaint regarding interstate inequities? Under what circumstances would the Sixth Circuit be likely to accept an argument based on interstate inequities? How did Congress respond to these concerns in the 1990 Amendments? See §§ 110(a)(2)(D); 176A; *see also*, note 1 following the *Connecticut* case, *supra*. What are the responsibilities and powers of an interstate transport commission?

3. Following the decision in *Air Pollution Control District*, Jefferson County remained out of compliance with the NAAQS. What measures must the County now take to achieve full compliance as required by the Act? Must it impose additional controls on the Kentucky plants

while Gallagher continues to emit pollutants without any controls? Suppose Gallagher increases its emissions so that it now contributes an additional three percent to the nonattainment areas of Jefferson County. Must the Kentucky facilities contribute a corresponding reduction in their emissions?

4. The primary ambient air quality standards for SO_2 must be achieved based on a maximum annual mean of $80 \mu\text{g}/\text{m}^3$ and a maximum 24-hour concentration of $365 \mu\text{g}/\text{m}^3$. 40 C.F.R. § 50.4 (1990). The secondary standard is a maximum 3-hour concentration of $1300 \mu\text{g}/\text{m}^3$. 40 C.F.R. § 50.5. The 24-hour and 3-hour maximum concentrations may be exceeded once annually without violating the rules. *Id.* For this reason, EPA calculated Gallagher's contribution to Jefferson County's pollution problem based on the second highest 24-hour and 3-hour concentrations that were anticipated to occur in Kentucky as a result of the contributions from the Gallagher facility. EPA determined that when emissions from Gallagher were at this level, they would consume 34.5 percent of the maximum 24-hour concentration, and 47 percent of the maximum 3-hour concentration. EPA further found that by 1985 Gallagher's emissions would be the predominant influence on air quality in Louisville, Kentucky. Nonetheless, EPA determined and the court found that Gallagher's emissions did not contribute substantially to Jefferson County's pollution problem. Why?

5. In 1980, several New England states filed petitions with EPA pursuant to § 126, alleging that SO_2 and NO_x emissions from several Midwestern states were causing violations of the NAAQS in these and other states. Underlying the petitioner's allegations regarding NAAQS was an overriding concern that the SO_2 and NO_x emissions from these Midwestern states were the principal contributions to New England's acid rain problem—a problem that, until 1990, was not addressed directly by the Clean Air Act. Hearings on the petition were held in 1981 but no action was taken until a lawsuit was filed by several states in 1984 challenging the agency's failure to act within 60 days as required by § 126 of the law. In *New York v. Ruckelshaus*, 21 Env't Rep. Cas. (BNA) 1721, (D.D.C. 1984), the District Court for the District of Columbia ordered EPA to act on the petition. On December 5, 1984, EPA denied the petition. 49 Fed. Reg. 48,152 (1984). The original lawsuit continued following the decision denying the petition, and evolved to encompass a claim under § 115 of the Act as discussed in the materials that follow. See *Thomas v. New York*, 802 F.2d 1443 (D.C. Cir. 1986) *cert. denied*, 482 U.S. 91 (1987).

6. Are the *Connecticut* and *Air Pollution Control District* cases consistent with the "prevention of significant deterioration" requirements of the Act? Look closely at § 110(a)(2)(D)(i)(II). See also §§ 161-169 and the materials at Chapter 7, *infra*.

7. The new program included in the 1990 Amendments for controlling acid deposition should substantially reduce the likelihood for interstate SO_2 air pollution problems. See Clean Air Act, Subchapter IV, *Acid Deposition Control*. As is described in greater detail in Chapter 9, the acid deposition control program is designed to bring all fossil fuel-fired utilities, including Gallagher, to a maximum SO_2 emissions level of 2.5 lbs/mm BTU by 1995 and 1.2 lbs/mm BTU by 2000. The generous emissions trading aspects of the law could conceivably result in continuing problems in localized areas. For example, Gallagher could choose to purchase allowances that would allow it to continue to emit SO_2 at a rate of 6 lbs/mmBtu. Nonetheless, the overall reductions which are supposed to be achieved are so dramatic nationwide (>50%) that interstate conflicts with respect to SO_2 (and perhaps NO_x) should largely be resolved.

HER MAJESTY THE QUEEN IN RIGHT OF ONTARIO v. EPA
912 F.2d 1525 (D.C. Cir. 1990)

BUCKLEY, Circuit Judge:

The question before us is whether the Environmental Protection Agency has any present obligation to take action under section 115 of the Clean Air Act, which establishes a procedure for the prevention of air pollutants in the United States from causing harm in the form of acid deposition to the public health and welfare in Canada. The Province of Ontario and a number of States and environmental groups have petitioned the EPA for a rulemaking that would essentially set in motion section 115's international pollution abatement procedures. We conclude, first, that section 115 does not require the EPA to initiate those procedures until it is able to identify the specific sources in the United States of pollutants that cause harm in Canada; and second, we are satisfied that the EPA is not as yet able to do so.

I. BACKGROUND

Section 115(a) of the Clean Air Act provides in relevant part as follows:

Whenever the Administrator, upon receipt of reports, surveys or studies from any duly constituted international agency has reason to believe that any air pollutant or pollutants emitted in the United States cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare in a foreign country . . . , the Administrator shall give formal notification thereof to the Governor of the State in which such emissions originate.

The Administrator's finding that pollution emitted in the United States contributes to such air pollution is referred to as an "endangerment finding."

Under section 115(b), the notice to the Governor of the State in which such emissions originate is deemed to be a finding that its State Implementation Plan ("SIP") under the Clean Air Act is inadequate and must be revised to the extent necessary "to prevent or eliminate the endangerment." *Id.* § 115(b); *see id.* § 110(a)(2)(H)(ii). (SIP's impose controls upon individual polluters within each State sufficient to ensure that national ambient air quality standards are met.) This process is referred to as the "SIP revision" procedure.

The remedy provided by section 115 is applicable "only to a foreign country which the Administrator determines has given the United States essentially the same rights with respect to the prevention or control of air pollution occurring in that country as is given that country by this section." *Id.* § 115(c). This determination is known as a "reciprocity finding."

The dispute in this case is whether the EPA has a present obligation, under section 115, to promulgate endangerment and reciprocity findings as proposed rules with respect to U.S. emissions that allegedly result in harmful levels of acid deposition in Canada. Acid deposition is believed to result primarily from the transportation of sulphur and nitrogen oxide emissions into the atmosphere where they are converted, by chemical processes, into acids that, in combination with water vapors, precipitate in the form of "acid rain," often many hundreds of miles from their source.

Acid rain is alleged to have serious detrimental effects on lakes and streams, soils, crops, building materials, forests, and drinking water. Yet considerable uncertainty and controversy attend the issue, and debate continues over the geographic areas affected by acid rain, the types and extent of damage involved, ambient concentrations and deposition levels, and the ability

of scientists to identify the specific sources of the emissions in the United States and Canada that may contribute to each country's and its neighbor's acid rain problem.

The EPA's view of section 115 is that the endangerment finding under section 115(a) is inextricably linked to the requirement that it notify the States whose SIP's must be revised under section 115(b); in other words, the EPA believes that it need not make an endangerment finding until it is able to identify the sources of the pollutants. Otherwise, it will not be able to give the required notification. It then argues that because it currently lacks sufficient information to be able to trace pollutants affecting the Canadian health and welfare to specific sources in the United States, it is not obliged to make endangerment findings at this time. In sum, under the EPA's interpretation, section 115 requires a "unitary proceeding."

Conversely, in petitioners' view the section 115 remedial process may be implemented in stages. They note, first, that the endangerment finding requires only that the Administrator believe that sources within the United States—not in a particular State—are harming Canada, and contend that once the EPA is able to make endangerment and reciprocity findings, it must do so. Petitioners argue that once those findings are made, the statute mandates that the Administrator "shall" proceed with abatement measures even though he may not yet be able to pinpoint the specific sources. They conclude that the EPA has already effectively made endangerment and reciprocity determinations, and therefore it is obliged to publish them as proposed rules; and having made those determinations, the agency may not simply refuse to take *any* corrective action while it continues to study the problem. Petitioners do not base their argument on a belief that the EPA can in fact trace pollutants to their specific sources at the present time.

The case before us has its origins in two letters written in January 1981 by EPA Administrator Douglas M. Costle to Secretary of State Edmund Muskie and Senator George Mitchell. See *New York v. Thomas*, 613 F. Supp. 1472, 1486-93 (D.D.C. 1985) (reproducing the two letters), *rev'd*, 802 F.2d 1443 (D.C. Cir. 1986), *cert. denied*, 482 U.S. 919 (1987). In the letter to Secretary Muskie, Administrator Costle concluded that "acid deposition is endangering public welfare in the U.S. and Canada and . . . U.S. and Canadian sources contribute to the problem not only in the country where they are located but also in the neighboring country." *Id.* at 1488. Administrator Costle's finding was based on the Seventh Annual Report on Great Lakes Water Quality issued by the International Joint Commission, *id.*, an organization established by the United States and Canada. The IJC is concededly a "duly constituted international agency" for purposes of section 115(a).

In his letter, the Administrator also concluded that Canadian legislation regarding transboundary air pollution "provides the Government of Canada with authority to give the United States essentially the same rights as Section 115 of the Clean Air Act gives to Canada." *Id.* at 1487. Administrator Costle cautioned, however, that whether Canada in fact exercises or interprets that authority in a manner that provides essentially the same rights to the U.S. is a "dynamic" determination "which will continue to be influenced by Canadian action now and in the future." *Id.*

The Administrator's letter to Senator Mitchell contained the same assessments in somewhat greater detail, *id.* at 1488-93, with the additional statements that his conclusions on endangerment and reciprocity were "adequate to warrant the initiation of a Section 115 based plan revision process in appropriate States" and that he had instructed his staff "to develop recommendations regarding the States which should receive formal notification." *Id.* at 1492. Administrator Costle also issued his findings in a press release dated January 16, 1981.

Because the EPA failed to take any further action under section 115, in 1984 several

States, environmental groups, and private citizens filed suit under section 304(a)(2) of the Clean Air Act, in the U.S. District Court for the District of Columbia. The plaintiffs alleged that the Costle letters imposed upon the EPA a duty to identify and issue SIP revision notices to those States contributing to acid rain in Canada, as provided in section 115. *New York v. Thomas*, 613 F. Supp. at 1476, 1481-86.

In July 1985, the district court granted summary judgment for plaintiffs, holding that the letters constituted both endangerment and reciprocity findings under section 115 and ordering the EPA to issue SIP revision notices to the appropriate States within 180 days. *Id.* at 1481-86; see *Thomas v. New York*, 802 F.2d 1443, 1446 (D.C. Cir. 1986), *cert. denied*, 482 U.S. 919 (1987). The court was concerned about the passage of time since the reciprocity determination had been made, however, and allowed the EPA an opportunity to determine whether that conclusion remained valid. 613 F. Supp. at 1484. In October 1985, EPA Administrator Lee M. Thomas found that reciprocity continued to exist. See *Thomas v. New York*, 802 F.2d at 1446.

On appeal, this court reversed, reasoning that Administrator Costle's endangerment and reciprocity findings were rules under section 551(4) of the Administrative Procedure Act, 5 U.S.C. § 551(4) (1988), and therefore could not be promulgated without notice and comment procedures. *Thomas v. New York*, 802 F.2d at 1446-48. As the Costle findings had not been subjected to these procedures, they could not serve as the basis for judicial relief. *Id.* at 1448. The court did not address the issue of whether the EPA was obliged to promulgate such findings, nor did it address their validity.

On April 7, 1988, the Province of Ontario ("Ontario") and a number of States and environmental groups (collectively, "New York") filed petitions for rulemaking with the EPA under section 553(e) of the APA, 5 U.S.C. § 553(e) (1988), requesting the EPA to promulgate endangerment and reciprocity findings pursuant to section 115 of the Clean Air Act. The petitions assert that four reports of duly constituted international agencies support an endangerment finding, that the reciprocity requirements of section 115(c) have been satisfied, and that Administrator Costle has specifically made both endangerment and reciprocity findings which have never been revoked by the EPA. The petitions do not request the EPA to identify the responsible sources or States or to prescribe emissions reductions or other remedial actions, as petitioners view those actions as part of the separate notification and SIP revision processes.

After the lapse of several months without a response, petitioners requested a meeting with EPA officials. The EPA agreed, and a meeting was held on September 9, 1988, with Mr. Don R. Clay, Acting Assistant Administrator for Air and Radiation. At the meeting, petitioners inquired into the status of their petitions and requested that the EPA provide a timetable for addressing them. Mr. Clay refused, but agreed to respond to their concerns in writing.

On October 14, 1988, Mr. Clay sent letters to counsel for the Ontario and New York petitioners. Letter from Don R. Clay to James M. Hecker (Oct. 14, 1988) ("Ontario Letter"); Letter from Don R. Clay to David Wooley (Oct. 14, 1988) ("New York Letter"). The letter to Ontario's counsel explained that it was written in response to counsel's request "for a report on the status of our consideration of those section 115 petitions." Ontario Letter at 1. The first paragraph of the letter contains the following disclaimer: "As discussed in our September 9 meeting, this letter represents only my thoughts on this issue, and does not necessarily reflect the position of the Administrator." *Id.* Mr. Clay also stated: "I do not believe that EPA presently has a sufficient information base to undertake the regulatory program required by section 115. . . . For that reason . . ., I believe it would be premature to rule on your petition

at this time.” *Id.* at 2.

Then, after describing the EPA’s ongoing efforts directed at the acid rain problem, Mr. Clay addressed the interpretation of section 115, declaring that “we continue to hold the view that section 115 is a unitary proceeding which can not be segmented, since the prescribed findings and notification are inextricably interrelated,” and that “our present understanding of the acid rain problem is not sufficient to make a judgment regarding the state by state, or even the aggregate reductions necessary to eliminate observed effects.” *Id.* at 3. Mr. Clay then stated that “in the absence of that understanding, I do not believe it would be prudent to initiate a regulatory program.” *Id.*

The letter concludes as follows:

In closing, I would like to assure you that we will continue to assess our ability to take action on your petition as we precede [sic] with our ongoing acid rain work. However, at least for the near future, I can not recommend that the Administrator take the discretionary act of making the findings required to trigger the section 115 requirements.

Id. at 4. The New York letter is substantially the same.

Petitioners now seek review of the Clay letters as final agency action denying their petitions for rulemaking.

II. DISCUSSION

Petitioners argue that the EPA has denied their rulemaking petitions, and that its denial was arbitrary, capricious, and not in accordance with law because once the EPA is able to make endangerment and reciprocity findings, it *must* publish them for notice and comment and thereby initiate the remedial process established by section 115. The EPA asserts that we lack jurisdiction over this matter because there has been no final agency action, and that the matter is not ripe for review. The EPA also defends its interpretation of section 115 as reasonable. We address the justiciability issues first, then turn to the merits.

A. Final Agency Action

Section 307(b)(1) of the Clean Air Act, the jurisdictional provision invoked in these petitions, provides for judicial review of final action by the Administrator. Accordingly, the threshold question presented is whether we have jurisdiction to review the Clay letters as final action by the Administrator denying petitioners’ rulemaking petitions. The EPA claims that the letters simply respond to petitioners’ request to be appraised of the status of their petitions and contain nothing more than one subordinate agency official’s views with respect to them. The agency maintains that as the letters neither deny nor grant the petitions, they have no direct or immediate effect on the rights of petitioners.

To determine finality, courts must decide “whether the agency’s position is definitive and whether it has a direct and immediate . . . effect on the day-to-day business of the parties challenging the action.” *Ciba-Geigy Corp. v. EPA*, 801 F.2d 430, 435-36 (D.C. Cir.1986) (internal quotes omitted); see also *FTC v. Standard Oil Co. of California*, 449 U.S. 232, 239 (1980) (“*SOCAL*”). The inquiry seeks to distinguish a tentative agency position from the situation where “the agency views its deliberative process as sufficiently final to demand compliance with its announced position.” *Ciba-Geigy*, 801 F.2d at 436. When an agency position is merely tentative, judicial intervention may “den[y] the agency an opportunity to correct its own mistakes and to apply its expertise” and “leads to piecemeal review which at

the least is inefficient and upon completion of the agency process might prove to have been unnecessary.” *SOCAL*, 449 U.S. at 242, *see also Ciba-Geigy*, 801 F.2d at 436.

Although the EPA emphasizes that it has taken no final action with respect to the petitions, “agency inaction may represent effectively final agency action that the agency has not frankly acknowledged.” *Sierra Club v. Thomas*, 828 F.2d 783, 793 (D.C. Cir.1987). When administrative inaction has the same impact on the rights of the parties as an express denial of relief, judicial review is not precluded. *Id.* Similarly, the absence of a formal statement of the agency’s position, as here, is not dispositive: An agency may not, for example, avoid judicial review “merely by choosing the form of a letter to express its definitive position on a general question of statutory interpretation.” *Ciba-Geigy*, 801 F.2d at 438 n. 9. These principles are consistent with the “flexible and pragmatic way” in which we apply the finality requirement. *Id.* at 435 (internal quotes omitted); *accord NRDC, Inc. v. Thomas*, 845 F.2d 1088, 1094 (D.C.Cir.1988).

On applying the foregoing principles, we conclude that the Clay letters represent final agency action as to the EPA’s interpretation of section 115. In other words, although (as we discuss below in part II-C) the EPA concededly made no final decision on petitioners’ request that the section 115 remedial process be initiated, it clearly and unequivocally rejected, on the basis of its construction of section 115, petitioners’ requests for a separate proceeding limited to the endangerment and reciprocity findings. This is demonstrated by the following language from Mr. Clay’s letter to the Ontario petitioners:

Contrary to your view on the divisibility of the process under Section 115, we continue to hold the view that section 115 is a unitary proceeding which can not be segmented, since the prescribed findings and notification are inextricably interrelated. Making the findings in the manner in which you request would trigger a vast regulatory mechanism which we currently do not believe we can undertake in an informed manner. . . . [O]ur present understanding of the acid rain problem is not sufficient to make a judgment regarding the state by state, or even the aggregate reductions necessary to eliminate observed effects.

Ontario Letter at 3 (emphasis added).

The EPA contends that this statement merely represents the views of a subordinate agency official and thus cannot be considered final action by the EPA Administrator that is subject to judicial review under section 307(b)(1) of the Clean Air Act. While it is true, as the EPA emphasizes, that Clay explicitly cautioned that his letters represented his own views and not necessarily those of his agency, there can be little doubt that in this instance, he was speaking for the EPA. This is underscored by his shift from the first person singular consistently used elsewhere in the letter to the collective “we” when asserting the unitary construction of section 115. In so doing, he was clearly speaking in an official rather than a personal capacity. Moreover, in his capacity as Acting Assistant Administrator for Air and Radiation, Mr. Clay was the “principal advisor to the Administrator in matters pertaining to air and radiation programs,” 40 C.F.R. § 1.41 (1989), and we have no reason to question his authority to speak for the EPA. *See Ciba-Geigy*, 801 F.2d at 437; *NRDC, Inc. v. Thomas*, 845 F.2d at 1094.

Finally, there is nothing tentative about the EPA’s interpretation of section 115; it is unambiguous and devoid of any suggestion that it might be subject to subsequent revision. *See Ciba-Geigy*, 801 F.2d at 437. Furthermore, the interpretation is hardly new: The EPA has adhered to it at least since 1984, when the first lawsuit was filed to compel the issuance of SIP revision notices, and Mr. Clay’s pronouncement that “we continue to hold [that] view” can

hardly be described as equivocal. See Ontario Letter at 3 (emphasis added); *New York v. Thomas*, 613 F.Supp. at 1482-86.

Thus, by adhering to the position that section 115's procedures are not divisible, the Clay letters serve to confirm a definitive position that has a direct and immediate impact on the parties; namely, the denial of their requests that the EPA promulgate endangerment and reciprocity findings even though it is not prepared to proceed with the SIP notification and revision process. The agency's failure to issue a more formal interpretation is irrelevant, as Mr. Clay's statement represents "effectively final agency action [construing section 115] that the agency has not frankly acknowledged." *Sierra Club v. Thomas*, 828 F.2d at 793.

* * *

C. The Merits

In reviewing an agency's interpretation of a statute it administers, we first determine, using traditional tools of statutory construction, "whether Congress has directly spoken to the precise question at issue." *Chevron U.S.A. Inc. v. NRDC, Inc.*, 467 U.S. 837, 842-43 & n. 9 (1984). If the intent of Congress is clear and unambiguous, "that intention is the law and must be given effect." *Id.* at 843 n. 9. If, on the other hand, the statute is silent or ambiguous with respect to a specific issue, then we "must defer to the agency's interpretation . . . so long as it is reasonable and consistent with the statutory purpose." *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 441 (D.C. Cir. 1989); see also *Chevron*, 467 U.S. at 843.

We are unable to draw any "unmistakable conclusion" as to whether Congress intended proceedings under section 115 to be unitary or divisible. See *Ohio*, 880 F.2d at 441. The statutory language can be read either way, and the legislative history is meager and unilluminating. And although, as we explain below, the structure of the statute tends to support the EPA's view, we believe it falls short of expressing a clear and unambiguous congressional intent. Under the second step of the *Chevron* analysis, however, we comfortably conclude that the EPA's view of section 115 is permissible, as it is both entirely reasonable and consistent with the statutory plan.

Section 115(a) provides that "[w]hensoever" the Administrator, based on certain reports or studies, has "reason to believe" that an air pollutant emitted in the United States causes or contributes to air pollution that may reasonably be anticipated to endanger health or welfare in a foreign country, he "shall give formal notification thereof to the Governor of the State in which such emissions originate." (Emphasis added.) The words "whensoever" the Administrator "has reason to believe" imply a degree of discretion underlying the endangerment finding. Once that finding is made, however, the remedial action that follows is both specific and mandatory—the Administrator "shall" notify the Governor of the specific State emitting the pollution and require it to revise its SIP.

The statute thus creates a specific linkage between the endangerment finding and the remedial procedures: Once the endangerment finding is made, the SIP revision process *must* follow. As a result, if there is insufficient information to enable the Administrator to implement those remedies, the promulgation of an endangerment finding alone would largely be pointless. For this reason, the EPA's view that the Administrator must have sufficient evidence correlating the endangerment to sources of pollution within a particular State before he can exercise his discretion to make endangerment findings is both reasonable and consistent with the statute.

Our view of the EPA's interpretation is further supported by section 115(b), which mandates a revision of the polluting State's SIP. Under subsection (b), the Administrator's

notice to the Governor represents a finding that the State's SIP must be revised "with respect to so much of the . . . plan as is inadequate to prevent or eliminate the endangerment referred to in subsection (a) of this section." (Emphasis added.) This provision reinforces the linkage between the endangerment finding and the remedy that Congress has prescribed. If the EPA does not have a sufficient base of knowledge to trace endangering pollutants to sources within specific States, then a simple endangerment finding would leave subsection (b) without effect. The unitary approach adopted by the EPA avoids that result.

Having decided that the EPA's interpretation of section 115 is permissible, we must next address whether, under that interpretation, the agency's refusal to initiate rulemaking proceedings was arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law. *See American Horse Protection Ass'n v. Lyng*, 812 F.2d 1, 4 (D.C. Cir.1987). On this issue, we hold that the Clay letters do not represent final agency action, and we are therefore precluded from reviewing the EPA's present refusal to commence proceedings under section 115.

As the letters indicate, the agency has not made any final decision on whether endangerment and reciprocity findings can be made, nor has it conclusively determined whether it can adequately trace pollutants to specific sources in order to issue SIP revision notices. To the contrary, Mr. Clay explained that the EPA is actively working to develop the kind of information that would enable it to initiate section 115 abatement procedures upon making an endangerment finding. Given the complexity of the technical and factual issues that the agency is required to address in this case, we see little basis for questioning its own assessment of its current capabilities.

* * *

We are, of course, fully aware that more than nine years have elapsed since Administrator Costle advised Secretary of State Muskie and Senator Mitchell of his conclusion that pollutants from sources in the United States were endangering the public welfare in Canada. But we are also aware of the unusual complexity of the factors facing the agency in determining the effects of acid rain and in tracing the pollutants from the point of deposition back to their sources. In fact, it was for the purpose, among others, of developing a better understanding of the acid rain phenomenon that Congress enacted the Acid Precipitation Act of 1980, 42 U.S.C. §§ 8901-8912 (1982).

This statute initiated a ten-year program, commonly known as the National Acid Precipitation Assessment Program ("NAPAP"), that is designed to identify the causes and sources of acid rain, to evaluate its environmental, social, and economic effects, and to assess potential methods of control. *See* 42 U.S.C. § 8903. We note that the final NAPAP report is due in December 1990. At oral argument the EPA pointed to this study as evidence of specific research being conducted that could enable the agency to take action under section 115; the EPA also asserted that the report should provide it with a sufficient basis to make a reasoned decision on the petitioners' rulemaking petitions.

It is in part on the basis of this information that we conclude that the EPA's delay in acting on the petitions has been neither arbitrary, nor capricious, nor contrary to law.

III. CONCLUSION

We find that the Clay letters are final agency action and ripe for review on the specific issue of whether section 115 provides for a unitary or divisible proceeding. We also hold that the EPA's interpretation of section 115 as unitary is reasonable. Finally, we hold that the EPA, in applying its view of section 115, has not taken final action on petitioners' requests for

rulemaking, which if granted would set in motion the whole of section 115's pollution abatement procedures. The petitions for review are therefore

Denied.

NOTES

1. Read § 115(a) of the statute. Do you agree with Judge Buckley's conclusion that EPA's interpretation is reasonable? Is EPA required to identify particular sources of pollution under § 115, or is it simply required to identify the source states? Consider that notice to the states triggers the SIP revision process. § 115(b). Under § 110(k)(5), EPA may then allow the states up to 18 months to submit a revised plan. EPA then has 6 months to decide whether the revised plan is complete. § 110(k)(1)(B). Following a determination of completeness, EPA has 12 additional months to approve, partially approve, disapprove, or conditionally approve the revised plan. § 110(k)(2).

2. In some states, it is difficult to determine with certainty the sources of air pollution that are contributing to a nonattainment problem. Recall, for example, the disagreements between Texas and EPA over the source of hydrocarbon emissions) *State of Texas v. EPA*, 499 F.2d 289 (5th Cir. 1974) *infra*. Why shouldn't the state be permitted to make the same argument that EPA made in the *Ontario* case about the need to ascertain the source of air pollution before it amends its plan to address a nonattainment problem?

3. The limitations of the various models available to predict impacts from long-range transport of air pollution lead to considerable scientific uncertainty about the specific contribution of individual sources to the acid deposition problem. Does the decision in *Ontario* open up the door for EPA to claim insufficient information to act under § 115 in virtually any case that might be presented to the agency?

4. The Acid Deposition Program included in the Clean Air Act Amendments of 1990 should ultimately render the issue raised in the *Ontario* case moot. Interestingly, however, the program ultimately adopted by Congress made no effort to identify particular sources which might be contributing to unacceptable pollution levels in Canada or the United States. All fossil-fuel fired utilities will eventually be subject to the program. Moreover, the liberal trading policy authorized by the 1990 Amendments suggests that the location of the pollution source is not a significant concern in addressing the acid deposition problem. What does this tell you about EPA's claim that it lacked sufficient information to make the state-by-state reductions that were necessary to address the problem?

5. The 1979 Geneva Convention on Long-range Transboundary Air Pollution has made some strides toward promoting reductions in air pollution across international boundaries. The original convention establishes an institutional framework for international cooperation on air pollution research and abatement. Five protocols adopted since the convention have set specific goals for the signatory nations to meet with respect to sulfur oxide (reduce emissions by 30% below 1980 levels by 1993—the 1985 Helsinki protocol), nitrogen oxide (stabilize emissions at 1987 levels by 1994—the Sofia Protocol of 1988), and volatile organic compound (reduce emissions 30% below 1988 levels by 1999—1991 Geneva Protocol). The text of and information about the Convention and its various protocols are available on the world wide web at http://www.unece.org/env/conv/conv_h.htm.

F. Enforcement of State Implementation Plans

Section 179 of the Clean Air Act requires the Administrator to impose sanctions directly against states that fail to submit or enforce an adequate SIP. If a state fails to correct such a deficiency within 18 months from the time that the Administrator makes a finding regarding the inadequacy of that state's submission or enforcement, then the Administrator is required either to cut off federal highway construction funds for that State, or to impose emission offsets of two to one for any new or modified major stationary sources located within nonattainment areas of that State. § 179(a), (b). If the deficiency continues for six months after imposition of the initial sanction, both sanctions must be imposed. In addition, EPA grants for air pollution planning and control may be withheld. By rule, the EPA has indicated that it will impose the emission offset sanctions before cutting off highway funds, unless it specifically decides to reverse the order in a particular case following notice and comment rulemaking. 40 C.F.R. § 52.31(d)(1), (6)(1996).

Suppose a state fails to submit a required SIP or SIP revision such that the 18-month sanction clock begins to run. Can the state wait until the end of the 18-month period, submit an inadequate SIP and then wait an additional 18 months after EPA disapproves the SIP before facing § 179 sanctions? The following case considers this problem.

NATURAL RESOURCES DEFENSE COUNCIL, INC. v. BROWNER 57 F.3d 1122 (D.C. Cir. 1995)

ROGERS, Circuit Judge:

The 1990 amendments to the Clean Air Act revised the regulatory framework for achieving national air quality goals. Among other changes, the amendments altered the schedule of State Implementation Plan ("SIP") submissions and Environmental Protection Agency ("EPA") responses thereto, and strengthened the sanctions that apply in the event of state noncompliance. Under § 179(a), an EPA finding of one of four possible SIP defects will trigger mandatory sanctions unless the state takes corrective action within 18 months. Petitioner Natural Resources Defense Council ("NRDC") challenges an EPA final rule that permits a state to halt the 18-month "sanctions clock," when it is triggered by an EPA finding of incompleteness or nonsubmittal, by submitting a complete plan, even if that plan is ultimately unapprovable due to substantive inadequacies. Because the language of § 179 plainly leads to the approach adopted by EPA, and NRDC has pointed to no persuasive evidence that Congress intended otherwise, we deny the petition for review.

I.

A. Statutory Framework. The Clean Air Act, as amended in 1970 and 1977, establishes a partnership between EPA and the states for the attainment and maintenance of national air quality goals. Under this regime, EPA has set health-based primary "National Ambient Air Quality Standards" ("NAAQS") for six pollutants. See 40 C.F.R. part 50 (1994). The states are responsible in the first instance for meeting the NAAQS through state-designed plans that provide for attainment, maintenance, and enforcement of the NAAQS in each air quality control region. Thus, each state determines an emission reduction program for its nonattainment areas, subject to EPA approval, within deadlines imposed by Congress.

In 1990, Congress amended the Act to revise the timing and content of the SIP requirements and provide new incentives and sanctions to encourage state compliance with Clean Air Act obligations. The 1990 amendments extended the Act's attainment deadlines, but added short-term deadlines for many intermediate steps, including SIP submissions. The amendments also created new mandatory sanctions for states that fail to comply with SIP submission and implementation duties.

Section 110 of the Clean Air Act sets forth the basic processes and requirements governing SIP submissions. Within 60 days of the submission, but no later than six months after the submission deadline, EPA must review each submission for completeness. § 110(k)(1)(B). The Act defines a complete submission as one that contains "the information necessary to enable" EPA to "determine whether the plan submission complies" with the NAAQS requirements. *Id.* § 110(k)(1)(A). Pursuant to the Act, EPA has developed criteria for evaluating whether a plan meets the completeness requirement. *See* 40 C.F.R. § 51.103 & App. V. If EPA finds the plan complete, it has twelve months to determine whether the plan meets the substantive requirements of the Act. § 110(k)(2). At this stage, EPA evaluates the detailed models for pollution control submitted by states and compares them with the federal standards and attainment deadlines. EPA may approve the plan in whole or in part, disapprove the plan, or conditionally approve the plan based on a state commitment to adopt specific enforcement methods. *Id.* § 110(k)(3)-(4).

Congress established a number of incentives for states to comply with SIP submission and implementation deadlines. These include mandatory sanctions, discretionary sanctions, and imposition of a Federal Implementation Plan ("FIP"). Of importance here, § 179 requires EPA to impose mandatory sanctions on states that fail to comply with SIP obligations. That provision lists several EPA findings that trigger an 18-month sanctions clock, at the end of which EPA must impose one of two sanctions "unless *such deficiency* has been corrected." § 179(a) (emphasis added). The triggering events are: a finding of state failure to make a required plan submission or failure to submit a complete plan; disapproval of a SIP in whole or in part; or a finding of state failure to implement any element of an approved plan. *Id.* § 179(a)(1)-(4). Once sanctions have been imposed, they remain in place until EPA determines that the state "has come into compliance" with its Clean Air Act obligations. *Id.* § 179(a).⁵

In addition, § 110(m) authorizes EPA to impose discretionary sanctions on a state at any time after EPA makes one of the four findings set forth in § 179(a). Consequently, in the event of state delay in submission and implementation of NAAQS program elements, EPA can levy sanctions without waiting for expiration of the 18-month period required before mandatory sanctions are imposed. The available sanctions are the same as those under the mandatory provision, but unlike the mandatory § 179(b) sanctions, discretionary sanctions are not limited to any particular nonattainment area and can be imposed statewide. *See Criteria for Exercising*

⁵ Under § 179(b), there are two mandatory sanctions for noncomplying states: (1) limitations on certain federal highway funding, and (2) "offset" limitations on certain developments in affected areas that require each new stationary emission source to be paired with a reduction in area emissions amounting to double the amount of increased emissions from the new source. One of these sanctions must be imposed if a state has not corrected the § 179 deficiency within 18 months after the EPA finding; the other sanction must be imposed within the next six months if the deficiency remains uncorrected. If EPA determines that the state has not acted in good faith, however, both sanctions apply simultaneously. § 179(a).

Discretionary Sanctions Under Title I of the Clean Air Act, 59 Fed. Reg. 1476 (1994).

The 1990 Amendments continued EPA's responsibility to prepare and impose a FIP within two years following a state's failure to develop and implement a complete and approved plan. *See* § 110(c). In the event of a deficiency finding due to nonsubmission, incompleteness, or disapproval, EPA must promulgate a federal plan for the attainment or maintenance of NAAQS in a particular region. The FIP provides an additional incentive for state compliance because it rescinds state authority to make the many sensitive technical and political choices that a pollution control regime demands. The FIP provision also ensures that progress toward NAAQS attainment will proceed notwithstanding inadequate action at the state level. In contrast to the mandatory sanctions, which a state can avoid merely by correcting the submission deficiency, FIP promulgation can be avoided only if EPA has actually approved the state's SIP submission.

Finally, the Act provides that when a nonattainment area fails to meet an attainment deadline, EPA must reclassify that area to the next higher classification. For example, a marginal ozone nonattainment area must be reclassified to a moderate nonattainment area within six months after the attainment date has not been met. *See* § 181(b)(2); *see also id.* § 182(b)(2) (carbon monoxide), § 188(b)(2) (particulate matter). Once reclassified, an area must meet the requirements of the new classification. *See, e.g., id.* §§ 182(i), 181(b)(4) (specifying additional obligations applicable to severe ozone areas that fail to attain). Because the control regime increases in cost and complexity with each step up the nonattainment ladder, *see, e.g., id.* § 182(b)-(d) (specifying additional control measures for higher ozone classification levels, such as enhanced vehicle inspection and maintenance programs), the reclassification provisions function as yet another incentive for states to attain their air quality objectives within the statutory deadlines.

B. Final Rule. EPA's final rule interpreting § 179 established the order in which EPA will apply the mandatory sanctions of § 179(b) and the procedures for starting and stopping the 18-month sanctions clock. *See* 59 Fed. Reg. 39,832, 39,837-52 (August 4, 1994). EPA explained that under its reading of § 179, a state can halt the sanctions clock by correcting the specific SIP deficiency that triggered the clock under § 179(a). In particular, the final rule provides that when a state fails to submit a complete plan within six months of the submission deadline, the subsequent submission of a complete plan will permanently stop and reset the sanctions clock, even if the plan is ultimately unapprovable. *Id.* at 39,857-58. Thus, when EPA determines that a state has missed a submission deadline or submitted an incomplete plan, the 18-month countdown begins, and if the state submits a plan that meets EPA completeness criteria within that 18-month period, no sanctions will apply. EPA then has twelve months to review the plan's technical elements for compliance with the Act's substantive requirements; if EPA finds one or more of these elements lacking, EPA will disapprove the plan and a new 18-month clock will begin.

II.

Petitioner NRDC timely petitioned for review of EPA's interpretation, *see* § 307(b)(1), taking issue with the type of state action EPA views as sufficient to halt the sanctions clock when a state has failed to submit a complete SIP. NRDC contends that the final rule conflicts with Congress' intent to impose mandatory sanctions no later than 18 months after EPA finds that a state has not submitted an approvable plan. In the alternative, NRDC maintains that even if Congress' intent is unclear, the rule is unreasonable because it "destroys the intricate structure" of the 1990 amendments, which Congress designed to ensure that states take

necessary steps to comply with federal air quality standards by statutory deadlines. Accordingly, the issue in the instant appeal is EPA's construction of the term "such deficiency" to refer to each specific finding or deficiency listed in § 179(a), whereby a state can halt a sanctions clock, triggered by an EPA finding of incompleteness, by submitting a complete plan.

The court reviews NRDC's challenge pursuant to the framework set forth in *Chevron USA, Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). Under this analysis, the court must first exhaust the "traditional tools of statutory construction" to determine whether Congress has spoken to the precise question at issue. *Id.* at 843 n. 9. If the court can determine congressional intent, "then that interpretation must be given effect." *Kansas City v. Department of Housing & Urban Dev.*, 923 F.2d 188, 191 (D.C. Cir. 1991) (citing *United Food & Commercial Workers*, 484 U.S. 112, 123 (1987)). If, on the other hand, "the statute is silent or ambiguous with respect to the specific issue," then the court will defer to a "permissible" agency construction of the statute. *Chevron*, 467 U.S. at 843. We conclude under step one of the *Chevron* analysis that the language and context of § 179 clearly reveal that Congress intended to allow states to avoid mandatory sanctions by correcting only the specific deficiency that initially triggered the sanctions countdown.

Our inquiry begins, as it must, with the text of the statute. See *Demarest v. Manspeaker*, 498 U.S. 184, 187 (1991) * * *. After setting forth several types of EPA deficiency findings—for nonsubmittal, incompleteness, substantive unapprovability, or nonimplementation—§ 179(a) provides that:

"unless such deficiency has been corrected within 18 months after the finding, disapproval or determination referred to in paragraphs (1), (2), (3), and (4), one of the sanctions referred to in subsection (b) of this section shall apply. . . ."

§ 179(a) (emphasis added). Under the only natural reading of the term, "such deficiency" refers to the "state failure[]" (as the caption puts it) that gave rise to the EPA finding or determination listed in § 179. As such, the deficiency that must be remedied is the specific deficiency that, by leading to an EPA "finding, disapproval or determination," triggered the sanctions clock. It follows that when EPA activates a sanctions clock because a state has failed to submit a complete SIP, EPA must also halt the clock when the state corrects that specific deficiency. EPA adopted this interpretation in its final rule, see 58 Fed. Reg. at 39,850-51, and we agree that the statute requires it.

NRDC's contrary reading of § 179 lacks the textual support necessary to overcome EPA's straightforward construction. NRDC maintains that Congress designed § 179 to address only two types of state SIP deficiencies: a state's failure to submit a SIP that meets the Act's requirements, or a state's failure to implement an approved SIP. Then, after a finding of nonsubmittal or incompleteness, the 18-month clock would be activated and could only be stopped when a state corrects the underlying deficiency by submitting an approvable plan. In formulating state obligations under the Clean Air Act, according to NRDC, Congress did not differentiate between the duty to submit a complete plan and the duty to submit an approvable plan. NRDC notes, for example, that the SIP submission deadlines make no such distinction; rather, they require states only to submit plans that satisfy the statutory criteria—namely, plans that are approvable. See § 110(a)(2) (listing requirements that each plan must satisfy). In NRDC's view, this indicates that Congress' only concern was that a state timely submit an approvable plan, and that only an approvable SIP can turn off the sanctions clock.

To explain why § 179(a) lists four separate events that activate the 18-month sanctions

clock, NRDC distinguishes between administrative findings that trigger the sanctions clock, and “underlying deficiencies” in state compliance that must be corrected to avoid sanctions. NRDC suggests that Congress listed the EPA findings in § 179(a) in order to ensure that the sanctions clock would be promptly activated where plan inadequacies could be readily identified. Under the two-stage procedure established in § 110(k), EPA first makes an essentially ministerial finding of completeness, a process taking at most six months. By contrast, the plan approval process may take up to twelve months due to the more extensive technical analyses necessary to ensure that the SIP meets the Act’s substantive requirements. See § 110(k)(1)-(3). By listing incompleteness and nonapproval as separate triggering events, NRDC contends, Congress meant to set the clock ticking at the earliest possible moment, not to establish a separate state duty to submit a complete SIP.

Although plausible in theory and principle, NRDC’s reading cannot be reconciled with Congress’ use of the term “such deficiency” in § 179(a). NRDC points to no specific textual support for its contention that this phrase refers to the failure to submit an approvable SIP. Instead, NRDC maintains that § 179 can be properly understood only in light of the statutory scheme and legislative history that, it asserts, show a clear congressional intent at odds with EPA’s interpretation. Where the terms of a statute are unambiguous, further judicial inquiry into the intent of the drafters is generally unnecessary. See *Demarest*, 498 U.S. at 190-91; *Inner City Broadcasting Corp. v. Sanders*, 733 F.2d 154, 158 (D.C. Cir. 1984) (“[U]nless contrary indications are present, a court can assume that Congress intended the common usage of the term to apply.”). At the same time, “while the immediate statutory text is the ‘best evidence’ of congressional intent,” it is not “the only such evidence.” *Tataranowicz v. Sullivan*, 959 F.2d 268, 276 (D.C. Cir. 1992) (citing *McCarthy v. Bronson*, 500 U.S. 136, 139 (1991) * * *. Reference to statutory design and pertinent legislative history may often shed new light on congressional intent, notwithstanding statutory language that appears “superficially clear.” Here, however, NRDC has presented no persuasive evidence that Congress intended any meaning other than that suggested by a straightforward reading of § 179.

As evidence of Congress’ true intent, NRDC points to the role of mandatory sanctions within the statutory scheme as a whole. The Clean Air Act, it contends, established an intricate structure of intermediate steps designed to lead states gradually to attainment of the national air quality standards. Congress intended the 1990 amendments to remedy the failings of the pre-1990 Act, which did not impose specific incremental deadlines and thus led to widespread nonattainment. The 1990 amendments, therefore, included specific deadlines for states to submit emission control plans well in advance of the attainment deadlines and imposed strict deadlines and requirements on EPA’s response to state submissions, including prompt sanctions to ensure that the plan submission deadlines were met.

According to NRDC, EPA’s rule disrupts this system and perversely rewards state delay. A state that submits a complete but unapprovable SIP on schedule, for example, will face sanctions sooner than a state that submits an incomplete SIP, waits until just before the 18-month period expires, and then submits a complete SIP. If that SIP ultimately proves unapprovable, moreover, it is possible that four and a half years might elapse between the initial SIP deadline and the imposition of mandatory sanctions. In some circumstances, NRDC notes, EPA’s rule may allow a state to avoid mandatory sanctions until after the attainment dates have already passed. Finally, NRDC notes that the rule will create the anomalous result that FIPs will be implemented in many cases before states face sanctions for their failure to submit approvable state plans, thereby rendering sanctions superfluous. Thus, NRDC

maintains that EPA's interpretation conflicts with Congress' intent to strengthen the sanctions regime in tandem with a graduated program of state compliance.

As NRDC views it, EPA's interpretation destroys an otherwise seamless web of incremental state obligations that together lead inexorably to NAAQS attainment. But § 179 is only one of several mechanisms in the 1990 amendments that encourage state compliance. EPA's discretionary authority under § 110(m) can be used to counteract a state's abuse of the SIP submission timeline, for example. At the same time, the attainment deadlines remain intact, complete with additional program obligations in the event of nonattainment, irrespective of a state's dereliction in the SIP process. In addition, the statute requires EPA to impose a FIP within two years of a deficiency finding—a control regime that remains in place until the state submits and gets approved its own SIP. Furthermore, EPA observes that even if states abuse the SIP submission schedule, under most circumstances the § 179 sanctions will precede the attainment deadlines. Hence, although Congress clearly established mandatory sanctions to increase the pressure on recalcitrant states and EPA, the additional delay allowed by EPA's interpretation, as compared with that urged by NRDC, is not incompatible with the multi-faceted statutory scheme as a whole. *See Natural Resources Defense Council, Inc. v. EPA*, 822 F.2d 104, 113 (D.C. Cir. 1987) (“statutes are rarely, if ever uni[-]dimensionally directed towards achieving or vindicating a single public policy. . . . While a broad public policy goal may well be the animating force driving the legislation, achievement of actual passage of the measure invariably requires compromise and accommodation.”); *cf. Natural Resources Defense Council, Inc. v. EPA*, 22 F.3d 1125, 1139 (D.C. Cir. 1994) (finding no inconsistency in EPA's setting an implementation date for vehicle inspection programs after Clean Air Act attainment deadline). As such, NRDC's reference to the statutory scheme as evidence that EPA's rule misconstrues congressional intent is unavailing.

* * *

* * * In light of the clear meaning of the words used by Congress, and “absent a clearly expressed legislative intention to the contrary,” *Consumer Product Safety Comm'n v. GTE Sylvania, Inc.*, 447 U.S. 102, 108 (1980), we uphold EPA's construction and it is unnecessary to reach the second step of the *Chevron* analysis. *See Chevron*, 467 U.S. at 843. Accordingly, we deny the petition for review.

NOTES

1. As *Browner* suggests, the 1990 Amendments revised the submission and approval process for SIPs. Under § 110(k), EPA was required by August, 1991 to promulgate rules establishing numerous criteria which plans must meet before EPA is required to act on them. Within six months following submission, EPA must advise the state whether a SIP or revision meets their minimum criteria. If EPA fails to so advise the state, the plan or revision is deemed to meet the minimum criteria. (The statute actually appears to contemplate a decision by EPA within 60 days in at least some instances. But the language of § 110(k)(1)(B) is unclear, and since the sanctions are not imposed until six months have expired, this appears to be the operative deadline.) Within 12 months thereafter, EPA must act on the plan or revision. Existing SIPs, however, remain in effect until a revision is approved, and the law does not impose any sanctions should EPA fail to meet the 12 month deadline. § 110(k)(2).

2. In *General Motors Corp. v. United States*, 476 U.S. 530 (1990), the Supreme Court construed an earlier version of the statute which required the EPA to approve or disapprove a state submission within four (4) months. The Court held that the EPA's failure to act on a state submission within the four month period did not preclude sanctions against a company in violation of an existing SIP, but in compliance with the revisions proposed by the state. The Court acknowledged, however, that EPA's obligation to act on a SIP revision was subject to the APA's general requirement that agencies conclude matters "within a reasonable time." 5 U.S.C. § 555(b). A remedy is available under the APA for agency action unreasonably delayed. 5 U.S.C. § 706(1).

3. A SIP has "the force and effect of federal law", and accordingly they can be enforced in federal courts. *Union Electric Co. v. EPA*, 515 F.2d 206, 211 & n.17 (8th Cir. 1975), *aff'd*, 427 U.S. 246 (1976); *see also*, *Citizens for a Better Environment v. Deukmejian*, 731 F. Supp. 1448, 1460 (N.D. Cal. 1990) ("[I]f anything is clear it is that SIP commitments are enforceable independent of agency action.")

4. New York City is a nonattainment area for CO. A provision in the New York SIP required the City to "assure that mitigating measures will be implemented" for any project proposed for the City that might violate or exacerbate carbon monoxide standards. The particular measures to be employed were not specified. The SIP had been adopted under the 1977 Amendments and, as provided under those Amendments, required full compliance with the CO standard no later than the end of 1987. The 1990 Amendments extended the compliance deadline to December 31, 1995 or possibly December 31, 2000. Do the more recent amendments absolve the City of its responsibility? In *Coalition Against Columbus Center v. New York*, 967 F.2d 764 (2d Cir. 1992), the court held that the City remained bound by the SIP requirements until it was properly revised. *See* § 110(n)(1); *see also*, *Citizens for Better Environment v. Wilson*, 775 F. Supp. 1291 (N.D. Cal. 1991). Thus, a violation of this SIP requirement could be enforced by a private person under the citizen suit provision of the statute. § 304(a)(1), (f)(3).

5. In *Coalition for Clean Air v. Southern California Edison Co.*, 971 F.2d (9th Cir. 1992), the Court of Appeals held that the EPA's obligation to promulgate a federal plan within two years of a 1988 decision disapproving a part of the California SIP survived passage of the 1990 Amendments notwithstanding the changed circumstances brought about by those amendments. EPA is required to prepare a federal implementation plan within two years after the Administration finds that the state has failed to submit an adequate SIP or SIP revision required by the Act, or within two years after a SIP is disapproved in whole or in part. § 110(c)(1).

PROBLEM #2: THE SCOPE OF FEDERAL AUTHORITY UNDER STATE IMPLEMENTATION PLANS

The State of Confusion was required by the 1990 Amendments to submit a revised SIP to address nonattainment problems in the Bedlam Air Quality Control Region. The Bedlam AQCR is a moderate ozone nonattainment area. Bedlam is a large metropolitan area, and the ozone nonattainment problem has been attributed to inadequate controls on motor vehicles. Confusion proposed to adopt only those requirements specifically delineated at § 182(b) for moderate ozone nonattainment areas. EPA determined that these changes would not be sufficient to achieve the primary ozone standards by November 15, 1996. Accordingly, EPA rejected the Confusion revision and adopted a federal plan for the State. Among other things, EPA's plan requires Confusion to—(1) provide for the construction and maintenance of a light rail system for the Bedlam AQCR by the end of 1996; (2) create a network of at least 100 miles of bike lanes within the Bedlam AQCR by the end of 1996; (3) establish preferential bus/carpool lanes on all interstate highways within the metropolitan area; (4) require the retrofit of pre-1980 vehicles registered in the Bedlam AQCR with certain pollution control devices; (5) adopt, implement and enforce a vehicle inspection and maintenance program for the Bedlam AQCR.

Does EPA have the authority (or the responsibility) to impose such requirements on the State of Confusion? See § 110(c). What constitutional problems, if any, might be raised by Confusion in a challenge to EPA's action? Assuming that the four requirements noted are found to be necessary to achieve the NAAQS for ozone, what alternative means, if any, does EPA have to achieve these requirements? What problems will the EPA have employing alternative means assuming they are available? See *District of Columbia v. Train*, 521 F.2d 971 (D.C. Cir. 1975), *vacated and remanded for consideration of mootness, sub nom, EPA v. Brown*, 431 U.S. 99 (1977).

G. Judicial Review of State Implementation Plans

Section 307(b) of the Clean Air Act provides in relevant part:

A petition for review of the Administrator's action in approving or promulgating any implementation plan under Section 110 [of this title] . . . may be filed only in the United States Court of Appeals for the appropriate circuit.

In *Anaconda Co. v. Ruckelshaus*, 482 F.2d 1301 (10th Cir. 1973), the court held that "where, as [under Section 307(b)], Congress has specifically designated a forum for judicial review of administrative action and does so in unmistakable terms, except under extraordinary circumstances, that forum is exclusive." *Id.* at 1304-05. Note the "extraordinary" machinations that Kennecott Copper Corporation employed in an unsuccessful effort to circumvent this holding as described in the following case.

KENNECOTT COPPER CORP. v. COSTLE

572 F.2d 1349 (9th Cir. 1978)

SNEED, Circuit Judge:

I. PROCEDURAL HISTORY

This action, which we designate as *Kennecott II*, is merely the latest stage in a continuing battle between Kennecott Copper Company and the EPA as to the appropriate methods of pollution control to be employed at Kennecott's smelter in McGill, Nevada. A brief review of the procedural history of this controversy at this point will be helpful.

The SIP proposed by Nevada pursuant to § 110 of the Clean Air Amendments of 1970 was approved by the EPA except for, *inter alia*, the provisions pertaining to control of sulfur dioxide. Following the statutory mandate, the EPA promulgated SO₂ emission limitations for Nevada. As applied to Kennecott's McGill smelter, these regulations required an acid plant capable of reducing SO₂ emissions by 60%, an intermittent control system (a tall stack and production curtailments) to assure maintenance of national ambient air quality standards, and a research program aimed at creating improved constant control technology capable of reducing SO₂ emissions by 86%.

Kennecott sought judicial review of this regulation pursuant to § 307(b)(1) of the Clean Air Amendments of 1970, which provides for direct review in the applicable Court of Appeals. This court, in what we designate as *Kennecott I*, upheld the EPA regulations, holding that "air quality standards must be met by continuous emission reduction controls so far as possible." *Kennecott Copper Corp. v. Train*, 526 F.2d 1149, 1159-60 (9th Cir. 1975), *cert. denied*, 425 U.S. 935 (1976). Kennecott, in objecting to the research program requirement, took the position that the EPA was "not authorized to require continuous emission reduction techniques in preference to intermittent controls or other methods for dispersion, or dilution, of pollutants" when the combination of such techniques and other controls devised by the state in its SIP would "attain and maintain national air quality standards within the statutory time periods." *Id.* at 1152. Under such circumstances the EPA must approve the state's SIP, argued Kennecott.

We rejected this contention and sustained the EPA's research program requirement. In doing so, we held that national ambient air quality standards must be met to the extent feasible by constant emission controls. A state plan which meets these standards by not utilizing feasible constant emission controls must be rejected under the authority of section 110(a)(2)(B) of the Clean Air Amendments of 1970. In so holding we took special note of the fact that, because EPA has undertaken to assure Kennecott that under its interpretation of the statute economically infeasible constant emission controls would not be required, "EPA could not compel Kennecott to install additional emission reduction systems at McGill unless it were economically feasible for Kennecott to do so." *Id.* at 1160. Inasmuch as Kennecott in *Kennecott I* did not object to the SIP requirement of an acid plant capable of reducing emissions by 60%, we assumed that the requirement was considered by both Kennecott and EPA as economically feasible. *Id.* at 1151.

Subsequent to the decision in *Kennecott I*, the company decided that construction of any acid plant was economically infeasible. This conclusion was based on an asserted multimillion dollar rise in the cost of constructing the acid plant and a decline in the price of copper. Since the EPA was planning to enforce the regulations which had been approved in *Kennecott I* the

company chose to shut down completely in July 1976, rather than to risk sanctions for noncompliance.

Kennecott's next step was to petition the State of Nevada to revise its SIP. The revision requested by Kennecott required only a 40% reduction in SO₂ emissions and allowed achievement of this reduction through production curtailments rather than by use of an acid plant. In addition, dispersion through a tall stack was recognized as an acceptable method by which the State would achieve compliance with national ambient air quality standards. Kennecott also sought a variance for one year which would exempt it from meeting any requirements other than those which, by one means or another, would enable the State to achieve the national standards. On October 1, 1976 the State Environmental Commission approved both the revision of the SIP and the variance. On October 7 both were submitted to the EPA for action pursuant to § 110(a)(3). *See Train v. Natural Resources Defense Council*, 421 U.S. 60 (1975).

Before the EPA had a chance to act on these submissions, however, Kennecott filed suit on October 12, 1976 against the Administrator of the EPA in the U.S. District Court for the District of Nevada. This action sought a declaratory judgment that the revision complied with the requirements of the Clean Air Amendments, a mandatory injunction or mandamus requiring the Administrator to approve the variance and the revision, and an injunction prohibiting the Administrator from enforcing the originally approved SIP or taking any other action to impede the operation of the McGill smelter. On November 24, 1976, the district court granted all the requested relief. 424 F. Supp. 1217 (D. Nev. 1976). On April 25, 1977, this court granted the EPA's motion for a stay of the district court's order pending the determination of this appeal.

II. THE ISSUES.

The EPA attacks the jurisdiction of the district court to entertain this action. It first argues that § 307(b)(1) of the Clean Air Amendments of 1970 provides for exclusive jurisdiction in the appropriate Court of Appeals to review revisions of SIPs, thereby foreclosing this action at the district court level. The EPA further argues that § 304 of the Clean Air Amendments of 1970, the citizen's suit jurisdictional grant relied on by the district court, is inapplicable because the Administrator has discretionary responsibility in reviewing the state promulgated changes and because Kennecott failed to comply with the notice requirements of that section.

Kennecott responds by asserting that it is uncertain whether § 307 review is applicable to EPA denial of a revision of a SIP and that § 304 jurisdiction is appropriate because the Administrator has a mandatory duty to approve revisions of the SIP approved by the state which meet the requirements of § 110. Kennecott in support of § 304 jurisdiction argues that the Clean Air Amendments, as interpreted by the Supreme Court, give the states final authority in passing on the economic feasibility of such constant emission control systems as might be suggested by EPA. Kennecott makes the final argument that even if jurisdiction in the district court was technically improper, this court should consider the action as an original petition for review and hold that constant emission control systems are only required to the extent economically feasible and that a state's determination of economic infeasibility is binding on the EPA.

The district court, to establish its jurisdiction, relied primarily on section 304(a)(2) of the Clean Air Amendments of 1970 and secondarily on the Administrative Procedure Act, 5 U.S.C. § 701 *et seq.*, federal question jurisdiction, 28 U.S.C. § 1331, and the Mandamus Act, 28 U.S.C. § 1361. Under the circumstances of this case we believe this reliance in its entirety

was misplaced. Section 304(a)(2) does not afford jurisdiction because the duty of the EPA to review the variance Nevada granted is one which is discretionary. With respect to the other jurisdictional grounds relied on by the district court we believe judicial intervention at this point in the administrative process to be either invalid or inappropriate. Therefore, we must set aside the district court's preliminary injunction and remand this proceeding to the district court with directions to enter an order dismissing this cause of action.

III. CITIZEN SUIT PROVISION—§ 304.

Section 304(a)(2) of the Clean Air Amendments of 1970 provides that "any person may commence a civil action on his own behalf . . . against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under the Act which is *not discretionary* with the Administrator." (Italics added). Its legislative history reveals that Congress recognized the potential for disruption of the administrative process inherent in a broad grant of jurisdiction to hear all cases involving the alleged failure of the Administrator to take actions authorized by the Act. Senate Comm. on Public Works, 93d Cong., 2d Sess., A Legislative History of the Clean Air Amendments of 1970, Serial No. 93-18, Vol. 1 at 278 (1970) [hereinafter cited as Legislative History]. Therefore, in the Conference Committee action on the bill, the words "which is not discretionary with the Administrator" were added to the end of § 304(a)(2). Explaining this change, it was stated that "citizen suits against the Administrator will be limited to those duties which are mandatory under the legislation and the suits will not extend to those areas of enforcement with regard to which the Administrator has discretion." Legislative History at 112. Thus, the non-discretionary duty requirement imposed by § 304 must be read in light of the Congressional intent to use this phrase to limit the number of citizen suits which could be brought against the Administrator and to lessen the disruption of the Act's complex administrative process.

Under the circumstances of this case, we are convinced that the Administrator does not have a *mandatory* duty to approve either the revision or the variance. The Supreme Court has clearly established that state promulgated variances and revisions are each to be dealt with by the Administrator under the procedures set out in § 110(a)(3). *Train v. Natural Resources Defense Council*, *supra* at 80. That section provides that "[t]he Administrator shall approve any revision of an implementation plan applicable to an air quality control region if he determines that it meets the requirements of paragraph (2) and has been adopted by the state after reasonable notice and public hearings." In *Train v. Natural Resources Defense Council* the Court observed, "Under § 110(a)(2), the Agency is required to approve a state plan which provides for the timely attainment and subsequent maintenance of ambient air standards, *and which also satisfies that section's other general requirements.*" (Immediately preceding italics added). 421 U.S. at 79.

* * *

In the case before us Kennecott would have us permit the state to dictate to the Administrator how he should perform his discretionary duties and, following this usurpation, have the district court enforce the state's will. Our refusal to adopt this construction permits the Administrator to exercise his discretion in the manner the Administrator did in *Natural Resources Defense Council v. Train* when he determined that lead resulting from mobile and stationary sources was injurious to health and welfare. Once the Administrator, in the case before us, has determined that the revised SIP either does or does not meet all the requirements of § 110(a)(2) there is a nondiscretionary duty to act in accordance with his determination. Moreover, his determination, as will be pointed out, is not beyond the reach of proper judicial

review. Thus, we need not adopt the characterization of "not discretionary" in order to avoid what would otherwise be unlimited, unreviewable discretion.

IV. OTHER BASES FOR JURISDICTION.

Two additional bases of jurisdiction relied on secondarily by the district court can be disposed of quickly. *Califano v. Sanders*, 430 U.S. (1977) established that the Administrative Procedure Act, 5 U.S.C. § 701 *et seq.*, is not an independent source of jurisdiction. In addition, the Mandamus Act, 28 U.S.C. 1361, is not applicable for the same reason § 304 fails to provide jurisdiction. That is, to invoke § 1361 the act to be compelled must be mandatory or ministerial and not discretionary. *Short v. Murphy*, 512 F.2d 374 (6th Cir. 1975); *United States v. Walker*, 409 F.2d 477, 481 (9th Cir. 1969). Moreover, the existence of alternate remedies, which we believe exist in this case, precludes reliance on § 1361. *Cartier v. Secretary of State*, 506 F.2d 191 (1974), *cert. denied*, 421 U.S. 947 (1975).

Federal question jurisdiction under 28 U.S.C. § 1331, also relied on by the district court, presents a more difficult issue. *Califano v. Sanders*, in foreclosing the Administrative Procedure Act as an independent source of jurisdiction, relied on the 1976 amendment to § 1331 which removed the amount in controversy requirement for suits brought against the United States. This strongly suggests that § 1331 provides a jurisdictional basis for the action of the district court in this case.

We decline, however, to decide whether § 1331 so provides because, even if it does, first, the district court relied on incorrect legal principles in granting the preliminary injunction, and, second, the relief granted interferes with the exercise of administrative discretion. These two reasons provide ample grounds for our setting aside the preliminary injunction of the district court.

* * *

Our second reason for concluding that, even if § 1331 jurisdiction exists, intervention by the district court was improper rests on the view that until the EPA acts on the proposed revision of Nevada's SIP and variance it is improper to intervene judicially. While the doctrine of primary jurisdiction has not, to our knowledge, been applied to the EPA, its use with respect to the Interstate Commerce Commission, Railway Labor Board, and the National Labor Relations Board reflects a general concern with premature interference with the administrative process which we believe applicable to this case in its present posture. Although it is likely the Administrator will act in due course to reject the proposed revision and variance on the ground that constant emission controls are not being employed to the "maximum extent possible," we believe it unwise presently to proceed on that assumption. We cannot close our eyes to the fact that this opinion is being written in the year 1978 and that in 1977 the Clean Air Act was significantly amended. Circumstances have changed; we should not assume that both Kennecott and the EPA are unchanged. In any event, at this point we are convinced the judiciary should stand aside. *Cf. Sampson v. Murray*, 415 U.S. 61, 68 (1974); *Far Eastern Conference v. United States*, 342 U.S. 570, 574 (1952); *Wilderness Society v. Morton*, 479 F.2d 842, 886, *cert. denied*, 411 U.S. 917 (1973).

This conviction also precludes us from deciding whether the proceeding can be treated as an original petition for review under § 307 of the Clean Air Amendments of 1970. Prior to the 1977 Amendments considerable uncertainty existed with respect to whether the availability of § 307 review was to be broadly or narrowly construed. Compare *Oljato Chapter of Navajo Tribe v. Train*, 515 F.2d 654 (1975) with *Utah Power & Light Co. v. EPA*, 553 F.2d 215 (1977) and *District of Columbia v. Train*, 533 F.2d 1250 (1976). The 1977

Amendments to the Clean Air Act (§ 305(c)(2), Pub.Law No. 95-95) amended § 307(b)(1) of the Act to provide for exclusive court of appeals review of “any other final action of the Administrator under this Act which is locally or regionally applicable.” This enables us to stand aside, as we believe it proper to do, reasonably confident that in due course either the concern with the revision and variance will become moot or that final action with respect thereto by the Administrator will be subject to judicial review.

We reverse and remand with directions to dismiss the cause of action.

* * *

[The opinion of Judge HAUKE, concurring in part and dissenting in part, is omitted.]

NOTES

1. The court finds that “[o]nce the Administrator . . . has determined that the revised SIP either does or does not meet all the requirements of § 110(a)(2) there is a nondiscretionary duty to act in accordance with this determination. Does this mean that where EPA fails to Act following such a determination that review is available under § 304, the citizen suit provision? Recall from the introduction to this subsection that under § 307(b)(1), review of SIP decisions “may be filed only in the United States Court of Appeals for the appropriate circuit.”

2. “[C]ourts traditionally have been reluctant to apply [injunctive and declaratory remedies] to administrative proceedings unless they arise in the context of controversy “ripe” for judicial resolution. . . . [T]he basic rationale is to prevent courts, through the avoidance of premature adjudication, from entangling themselves in abstract disagreements over administrative policies . . . and also to protect the agencies from judicial review until an administrative decision has been formalized and its effects felt in a concrete way by the challenging parties. The problem is best seen in a two fold aspect, requiring us to evaluate both the fitness of the issues for judicial decision and the hardship to the parties of withholding court action.” *Abbott Laboratories v. Gardner*, 387 U.S. 136 (1967). Was the *Kennecott* case “ripe” for judicial review? How does the “ripeness” doctrine differ from the doctrine of primary jurisdiction described by the court in the second part of its opinion? See *United States v. Western Pacific Railroad*, 352 U.S. 59 (1956): “Primary jurisdiction . . . applies where a claim is originally cognizable in the courts and comes into play whenever enforcement of a claim requires the resolution of issues which, under a regulatory scheme, has been placed within the special competence of an administrative body.” *Id.* at 63-64.

3. Primary nonferrous smelters that were in operation before the enactment of the 1977 Amendments, such as Kennecott’s McGill smelter, were eligible for a nonferrous smelter order (NSO) under § 119 of the Clean Air Act. NSOs were allowed only for SO₂ emissions where the facility was “unable to comply with such [SO₂ emissions] requirement by the applicable date for compliance because no means of emission limitation applicable to such smelter which will enable it to achieve compliance with such requirement has been adequately demonstrated to be reasonably available. . . .” § 119(b)(3). Any eligible source could obtain two NSOs. The first extended compliance to January 1, 1983; the second to January 1, 1988. The NSO provisions finally afforded Kennecott a temporary solution for the compliance problems at its McGill smelter.

H. The Right to be Heard

ANACONDA CO. V. RUCKELSHAUS

482 F.2d 1301 (10th Cir. 1973)

WILLIAM E. DOYLE, Circuit Judge:

This is an action instituted in the United States District Court for Colorado by Anaconda Copper Company of Butte, Montana, seeking injunctive relief against various officials of the Environmental Protection Agency. Plaintiff sought relief against the promulgation of a proposed rule controlling emissions of sulfur oxide in Deer Lodge County, Montana unless and until defendants-appellants conduct an adjudicatory hearing. * * * The district court granted the requested relief in an extensive opinion which is reported at 352 F. Supp. 697 (D. Colo. 1972).

The questions presented to this court on appeal are * * * whether the Environmental Protection Agency is obligated to grant to Anaconda an adjudicatory hearing with the right to subpoena and cross-examine witnesses before promulgating or indeed holding further hearings on its proposed regulation under § 110(c) of the Clean Air Act Amendments. The crucial aspect of the case is then the validity of the *proposed* EPA regulation for the control of sulfur oxide emissions in Deer Lodge County, Montana where Anaconda operates its smelter. The company is the only significant source of sulfur oxide pollution in the county and so concededly the proposed regulation, although general in form, would apply to Anaconda alone.

Preliminary to the issuance by EPA of the proposed regulation, efforts were made to persuade state officials to issue a plan as required by the Clean Air Act Amendments of 1970. The Montana State Board of Health held a public hearing on Montana's proposed implementation plan. Anaconda was present and presented its views on the state's proposed regulation for restricting sulfur oxide emissions. Following this hearing, Montana submitted to the EPA an implementation plan, but the provision for control of sulfur oxide emissions was omitted. The state plan then was disapproved by the EPA on May 31, 1972, insofar as it excluded the sulfur oxide emissions provisions. Following this action the Administrator of the EPA, on July 27, 1972, proposed a regulation to control the emission of sulfur oxide within the County. This proposal would have limited emissions to a discharge of 7,040 pounds of sulfur oxides per hour. At the same time, EPA gave notice of intent to hold public hearings on its proposal on a date 30 days after the issuance. This provision of the regulation is said to have been patterned after the sulfur oxide emissions limitation which had been in the state's proposal which was deleted.

Anaconda immediately demanded an adjudicatory hearing on EPA's proposed regulation, but EPA's reply was that the public hearings were to be legislative or informational and not adjudicatory. Subsequently, it was further explained that the hearing would not be conducted in the nature of the trial. Instead, any interested persons or corporations could make a statement and all relevant testimony would be received. Also, the hearing record would remain open until October 7, 1972, for written statements or other submissions. After that there would be a further hearing to allow further public statements.

Anaconda's position expressed at the hearing was that it was spending large sums of money on its own initiative in an effort to control sulfur oxide emissions; that it was preparing to restrict them from the current rate of 64,000 pounds per hour to 50,000 pounds per hour.

Its position was further expressed that the 7,040 pounds per hour would be technologically and economically unfeasible and would create a significant water pollution problem.

Soon after this the present suit was filed (on September 26, 1972). An extensive evidentiary hearing was conducted. The district court then rendered its decision on December 19, 1972.

* * *

[The court held that the case was not ripe for review, that there was no justification for intervention by the district court, and moreover, that EPA was not required to prepare an environmental impact statement prior to promulgating a SIP revision under the Act. The court then proceeded to the following procedural question.]

III.

Our final question is whether there was sufficient substance to Anaconda's contention so that it would appear that it has been deprived of procedural due process by the EPA's refusal to grant a trial type adjudicatory hearing. Assuming that a showing of real deprivation would justify a threshold injunctive hearing, we must determine that the showing here was grossly insufficient to justify the action taken. The trial court saw as a result of denial of an adjudicatory hearing a violation of procedural due process together with a violation of the Clean Air Act and the Administrative Procedure Act. We must disagree. The Administrative Procedure Act requires that there be an adjudicatory hearing only if the agency statute specifies that the particular rule-making hearings be "on the record after opportunity for an agency hearing." No such requirement is set forth in the Clean Air Act. Notwithstanding that these words are used in other sections of the Act, omission of them in § 110(c) is therefore significant. See *Allegheny-Ludlum Steel Co.*, 406 U.S. 742, 757 (1972); 2 K.DAVIS, ADMINISTRATIVE LAW TREATISE § 13.08, at 225 (1958).

By requiring that the hearing under § 110(c) be public Congress sought to bring about broad and flexible participation from all interested groups subject always to a review by the court of appeals. The fact that the proceedings are transcribed does not, of course, mean that the hearing is "on the record."

The fact that Anaconda alone is involved is not conclusive on the question as to whether the hearing should be adjudicatory, for there are many other interested parties and groups who are affected and are entitled to be heard. So the guidelines enunciated by Mr. Justice Holmes in *Bi-Metallic Investment Co. v. State Board of Equalization*, 239 U.S. 441 (1915) are not applicable.

We have also examined the early decision in *Londoner v. Denver*, 210 U.S. 373, 386 (1908), and nothing therein imposes the adjudicatory requirement.

* * *

From our examination of the Act and the related case law and statutes, it would appear that the congressional requirement of a public hearing has been satisfied. Notice has been given and the proposed regulation has been issued. Anaconda appeared at that hearing and submitted material and was given an opportunity to submit more material and information for a period of 75 days following the public hearing. We perceive no violation of Anaconda's right to procedural due process. See *Myers v. Bethlehem Shipbuilding Corp.*, 303 U.S. 41 (1938); *NLRB v. Jones & Laughlin Steel Corp.*, 301 U.S. 1 (1937); *Anniston Mfg. Co. v. Davis*, 301 U.S. 337 (1937); *Buckeye Power, Inc. v. EPA*, 481 F.2d 162 (6th Cir. 1973); *Pax Co. of Utah v. United States*, 454 F.2d 93 (10th Cir. 1972).

Unending procedure could be produced by an adjudicatory hearing. This could bring

about unending delay which would not only impede but completely stifle congressional policy. We do not, of course, condemn the trial court's concern for the rights of Anaconda. Those rights are important and the court should be sensitive to them, but those rights are not of such magnitude as to overcome congressional policy and the rights of the remainder of the community.

The judgment of the district court is reversed and the cause is remanded with directions to vacate its judgment herein and to dismiss the action.

NOTES

1. State implementation plans and revisions may be adopted by a state and submitted to EPA only after "reasonable notice and public hearings." § 110(a)(1). What kind of hearings did Congress contemplate in imposing this requirement on the states?

2. Compare the Tenth Circuit's analysis with that of the District Court:

[O]rdinarily the typical requirements of due process of law form no part of a rulemaking hearing, and I agree emphatically that ordinarily a person is not entitled to any adjudicatory hearing when the purpose of the hearing is one of rulemaking. Citation of authority in support of this hornbook principle is not necessary. However, there are certain well delineated exceptions to this general principle, and I think that this case falls squarely and undeniably within those exceptions. To determine whether or not an adjudicatory hearing is or is not required cannot be decided upon the basis of any single test. Generally two tests are said to be of primary importance. First, one must answer the question: Is this action aimed at a single individual or company? Secondly, one must determine whether adjudicative facts form the basis for the proposed action. Emphatically both of those tests are met here. The so-called rule which is under consideration has to do with emissions of sulphur dioxide in Deer Lodge County, Montana, in a quantity of 7,040 pounds per hour. There is one and only one company at which this so-called rule is directed and that is the only company it can be directed at within the foreseeable future. This is a special rule. It is a single shot attack, aimed at the plaintiff and only at the plaintiff, and plaintiff's rights cannot be destroyed without due process of law under the guise of rule making.

Passing now to the second test, the record made in this case demonstrates that the proposed rule is dependent almost in its entirety on bitterly contested factual issues applicable to the only smelter in Deer Lodge County, Montana. The very cross-examination which was not permitted in the administrative hearing would have established (as it did at time of trial) that the proposed rule is dependent upon a determination of contested facts. Good faith consideration of the information which was brought out on cross-examination in this court might well change the provisions of the proposed rule, but the vital cross-examination was not permitted.

Anaconda Co. v. Ruckelshaus, 352 F. Supp. 697, 702-703 (D. Colo. 1972). Which court is right? Consider that all SIPs specify emission requirements and schedules for individual sources. If the District Court's decision is correct, what "adjudicative" facts likely formed the basis for EPA's decision?

3. In *Londoner v. Denver*, 210 U.S. 373 (1903) the Supreme Court addressed the validity of a statute that authorized the paving of a street upon petition of a majority of owners of property fronting on the street. Costs were to be apportioned among all property owners abutting the street in proportion to the benefits received. The landowners were given notice and the right to submit written objections, but had no right to an oral hearing. The court held that the landowners were denied due process of law. Subsequently, in *Bi-Metallic Investment Co. v. Colorado*, 239 U.S. 441 (1915) the Court sustained an order of the Colorado Tax Commission which increased the valuation of all taxable property in the city of Denver by 40 percent without providing the landowners the opportunity to be heard. *Londoner v. Denver* was distinguished on the grounds that it involved “[a] relatively small number of persons . . . who were exceptionally affected, in each case upon individual grounds. . . .” Where does the *Anaconda* case fall in this continuum?

4. Suppose that rather than a single source of SO₂, three sources of SO₂ contributed the entire SO₂ load for a region. Suppose further that the state decided to impose the burden of reducing SO₂ emissions entirely on one source, even though each source contributed approximately the same amount of SO₂ emissions, and each source used essentially the same pollution control technology. Does due process require an adjudicatory hearing in this situation?

7 PREVENTION OF SIGNIFICANT DETERIORATION

The prevention of significant deterioration (PSD) provisions found at Subchapter I, Part C of the Act are among the few that escaped relatively unscathed by the 1990 Amendments. Set forth below is a substantial excerpt from an important case involving the PSD program.

ALABAMA POWER COMPANY V. COSTLE 636 F.2d 323 (D.C. Cir. 1979)

LEVENTHAL, Circuit Judge:

This is one of three opinions issued today considering challenges to the validity of final regulations promulgated by the Environmental Protection Agency (EPA) on June 19, 1978 generally embracing the prevention of significant deterioration of air quality in the nation's "clean air areas." These "PSD" regulations interpreted and began the implementation of various provisions of the Clean Air Act Amendments of 1977. Pertinent provisions are gathered in title I, part C of the Clean Air Act as amended (hereafter sometimes referred to as the "PSD part" or the "PSD provisions").

* * *

I. BACKGROUND OF PSD PROGRAM AND REGULATIONS UNDER REVIEW

* * *

B. The PSD Program Prior to the 1977 Amendments

1) *Genesis of PSD Program.* Section 110 of the Act contained no explicit provision addressing potential deterioration of ambient air quality in those areas where ambient pollutant levels were lower than those mandated by primary and secondary NAAQS. EPA did not impose on the states any requirement to control new sources of pollution that posed no threat to ambient standards.

In 1972, the Sierra Club brought suit alleging that the Act required state plans to include measures to prevent the "significant deterioration" of air quality in those parts of the country where the ambient standards were being met. The District Court for the District of Columbia held that the Act's statement of purpose, contained in section 101(b)(1), imposed such an obligation. On June 12, 1972, it issued a preliminary injunction directing the Administrator to disapprove state plans and to promulgate regulations where the plan failed to take the measures necessary to prevent such deterioration. This court affirmed. On June 11, 1973, the

Supreme Court affirmed by an equally divided court. In response to the injunction, EPA disapproved all state plans in November 1972, and in 1973, following the Supreme Court's action, the agency initiated rulemaking to incorporate PSD requirements into each state plan.

2) *1974 PSD Regulations*. In December, 1974, the Administrator promulgated final regulations amending each state plan to include a PSD requirement. The new PSD program implemented through preconstruction reviews of new or modified sources of sulfur dioxide and particulate matter. "Significant deterioration" was defined in terms of allowable numerical increases in the concentration of sulfur dioxide and particulate matter in areas where ambient pollution levels were presumed by the regulations to be lower than those mandated by primary and secondary NAAQS. These regulated areas came to be referred to as "clean air areas," although, as will become clear from our subsequent discussion, the term encompasses areas that in fact need not possess air quality better than the applicable NAAQS. These allowable increases, or "increments," determined whether air quality deterioration associated with a new facility was permissible. Increment consumption, or "use," was calculated by reference to a "baseline" level of air quality. Under the 1974 regulations this baseline was defined as the representative air quality during 1974 *plus* the projected emissions from sources that had received permits to construct before January 1, 1975, but were not in operation by that date.

The 1974 regulations established a program under which the amount of new growth allowed—the size of increment—would depend upon the amount of growth desired for the area. Areas subject to PSD regulations were divided into three groups. Initially, all such areas were designated Class II, for which increments were set permitting moderate growth. Areas could be redesignated Class I, for which much smaller increments applied, allowing virtually no growth, or Class III, for which increases in pollution were allowed up to the national ambient standards. Procedures were established for redesignations by the state (or, with respect to areas within their jurisdiction, by Federal Land Managers and Indian Governing Bodies).

* * *

C. Clean Air Act Amendments of 1977

The 1977 Amendments maintain the basic structure of regulation of stationary sources through state plans, but made substantial changes in the requirements governing those plans. The Amendments provide for additional controls on existing sources to ensure protection of the ambient standards and visibility. Further, they establish strict requirements for major new sources to be located in areas where the national standards have not yet been attained ("non-attainment areas").

The central focus of this case is Part C of title I (sections 160-169) added to the Clean Air Act by the 1977 Amendments. Section 161 of the Act now provides an express directive that state plans include measures to prevent the significant deterioration of air quality in areas designated by the states under section 107(d)(1)(D) & (E) of the Act as having ambient air quality better than the applicable national primary or secondary ambient air quality standard, or for which there is insufficient data to make a determination of the air quality. An area so designated has commonly been referred to in the legislative history and in the literature that has developed as a "clean air area," a description often contrasted with the term "non-attainment area," which is defined by section 171(2) of the Act as an area that has been demonstrated to exceed an NAAQS for a given pollutant. We wish to alert the reader that the phrase "clean air areas" is a generalization that may be confusing when employed in technical usages. A so-called clean air area for a given air pollutant may include an area that for the same pollutant would be classified as a non-attainment area if sufficient data existed. Further,

since classification of areas is pollutant-specific, the same area may be a clean air area due to the air quality with respect to one pollutant, yet be a non-attainment area with respect to another pollutant. Finally, the areas of the country subject to regulation under the PSD provisions of the Act include areas other than those commonly referred to as clean air areas. With these caveats, which will be explained in greater detail as they become pertinent to our discussion, we will continue to use the term “clean air areas” as a shorthand expression where we do not feel the context calls for a more technical usage.

Under the provisions of the 1977 Amendments, areas subject to PSD regulation are divided into three classes; increments are set for each class; new major facilities to be located in such areas must meet technology-based emission limitations reflecting BACT; these facilities cannot commence construction if their emissions would cause or contribute to a violation of the applicable increments in a Class I, II or III area; and demonstrations that new facility emissions would not violate the applicable increments are to be based on both monitoring and diffusion modeling. The list of 19 major sources which emit, or have the potential to emit, 100 tons per year or more of any pollutant are subject to PSD review. In addition, any other source having the potential to emit 250 tons per year or more of any pollutant is also covered. As in the 1974 regulations, “modifications” of such major sources are also subject to PSD review. Section 165 of the Act tightens the requirement that must be included in state plans for the PSD preconstruction review and permitting of major new sources to be located in clean air areas. These stricter requirements include: (1) case-by-case determination of BACT rather than automatic application of NSPS; (2) requirements of air quality impact analyses performed in accordance with EPA regulations; (3) requirements for the protection of visibility in Class I areas even though Class I increments are met; and (4) provisions requiring public hearings in all cases instead of mere opportunity for written comment. Other changes in the 1974 regulations effected by the 1977 Amendments include provision for “variances” from Class I increments if stringent criteria are satisfied, and modification of the definition of “baseline.” Congress also structured the program to minimize disruption, by exempting existing sources from the permit requirement of section 165 until “modifications” of those facilities increased emissions, and by phasing sources under construction into the program. In addition, section 166 directs EPA to develop within two years PSD programs for pollutants other than particulates and sulfur dioxide. EPA is not required to follow the “area classification” approach for these other pollutants, but implementation through a permit program is contemplated.

D. PSD Regulations Under the 1977 Amendments

* * *

The regulations require that each major stationary source and each modification covered by the regulations undergo a detailed preconstruction review and obtain a permit prior to the commencement of construction. The PSD review process contains a number of steps:

1) *Control Technology Review.* Each new major source must meet all applicable new source performance standards promulgated under section 111 of the Act, all emission standards for hazardous pollutants under section 112 of the Act, and all applicable state implementation plan requirements. In addition, each such source must apply best available control technology (BACT) for sulfur dioxide and particulates unless emissions of that pollutant will be less than 50 tons per year, 1,000 pounds per day and 100 pounds per hour, whichever is most restrictive.

2) *Air Quality Review.* At the time an application for a PSD permit is submitted, the owner or operator of the proposed source must demonstrate that allowable emissions from the

source will not cause or contribute to a violation of any NAAQS or the applicable increments. Estimates of ambient concentrations that must be provided in order to determine compliance with these requirements must “be based on the applicable air quality models, data bases, and other requirements” specified in EPA’s modeling guidelines. The models described in these guidelines may be modified, or other models substituted, only after notice and opportunity for comment by the public, and written approval by the Administrator.

3) *Monitoring Requirements.* Two types of monitoring requirements are imposed on sources submitting PSD applications after August 7, 1978. An application must include a full year of continuous monitoring data for any pollutant emitted by the source for which there is an ambient standard. This monitoring data, along with the required modeling results, will form the basis for the permitting authority’s determination of whether the proposed source would cause or contribute to a violation of a primary or secondary NAAQS. The second requirement is for post-construction monitoring, to be used as the state or EPA feels necessary to determine actual impact of the source on primary or secondary ambient standards.

4) *Source Information.* The PSD permit application must include, at a minimum, information on the location, design, and planned operating schedule of the proposed facility, a detailed construction schedule, and a description of the control technology that is proposed as BACT. In addition, the applicant must provide an “analysis of impairment to visibility, soils, and vegetation” in the area, and an analysis of the air quality impacts of the expected growth associated with the proposed source. Meteorological and topographical information on the air quality impacts and nature and extent of any growth in the locale of the proposed facility since August 7, 1977, must also be provided if requested by EPA or the state.

5) *Processing Applications.* The regulations establish a complex process for handling the permit application. Within 30 days of receipt of the application, EPA must inform the applicant of any additional information required. EPA or the state must make a final determination on the application within one year after the application is complete. During that time, EPA or the state must: (a) make a preliminary determination whether the proposed source will be approved, disapproved, or approved with conditions; (b) give public notice of the preliminary determination, provide opportunity for comment and public hearing and the applicant’s responses, and give the applicant and the public notice of the final determination.

The regulations also require that, even after the PSD review process is completed and permit issued, the state plan must be revised and individual source emissions reduced if the state or EPA determines that an applicable increment or maximum permissible concentration is being violated.

II. POTENTIAL TO EMIT

At the heart of the PSD provisions lies a definition that is jurisdictional in nature. We refer to the section 169(1) definition of “major emitting facility,” which identifies sources of air pollution that are subject to the preconstruction review and permit requirements of section 165. The definition is not pollutant-specific, but rather identifies sources that emit more than a threshold quantity of *any* air pollutant. Once a source has been so identified, it may become subject to section 165’s substantial administrative burdens and stringent technological control requirements for each pollutant regulated under the Act, even though the air pollutant, emissions of which caused the source to be classified as a “major emitting facility,” may not be a pollutant for which NAAQS have been promulgated or even one that is otherwise regulated under the Act. As will become apparent from consideration of the ramifications of this definition, Congress’s intention was to identify facilities which, due to their size, are financially able to bear the substantial regulatory costs imposed by the PSD provisions and

which, as a group, are primarily responsible for emission of the deleterious pollutants that befoul our nation's air. Such facilities are defined in section 169(1) as those stationary sources of air pollutants from among 28 listed categories which "emit, or have the potential to emit" 100 tons per year or more of any air pollutant plus any other stationary source with the "potential to emit" 250 tons per year or more of any air pollutant.

EPA has interpreted the phrase "potential to emit" as referring to the measure of a source's "uncontrolled emissions"—*i.e.*, the projected emissions of a source when operating at full capacity, with the projection increased by hypothesizing the absence of air pollution control equipment designed into the source. Yet, the language and comprehensive scheme of the statute reveal that an emitting facility is "major" within the meaning of section 169(1), only if it either (1) actually emits the specified annual tonnage of any air pollutant, or (2) has the potential, when operating at full design capacity, to emit the statutory amount.

* * *

Looking at language, we see that the first sentence provides that a major emitting facility (in enumerated categories) must "emit, or have the potential to emit" 100 tons per year of any air pollutant. Plainly, the pollutants that sources "emit" is a reference to some measure of actual emissions. However, under EPA's interpretation of "potential to emit," the actual emissions calculation called for by the verb "emit" would lose all significance. When potential emissions are calculated, as EPA provided, by assuming operation at full capacity, without any reduction to take into account the operation of the facility's air pollution control equipment, then potential emissions will always and inherently exceed actual emissions. Under our construction a meaning is given to the use of "emit" and "or," as applicable in those instances when for any reason, whether or not there is fault or accident, the "cleansing" equipment has not been operated, or has been operated at variance from design.

* * *

Congress was presumably also aware of the high rate of effectiveness with which control equipment eliminates pollutants from unprocessed industrial emissions. For example, at the time of the enactment of the PSD provisions, technology in operation was capable of eliminating over 99% of the particulate matter from emissions. Thus, a source with the potential—according to EPA's "uncontrolled emissions" standard—to emit 100 tons per annum of particulate matter would emit in actuality less than one ton per year. The record illustrates that the heating plant operating in a large high school or in a small community college would become "major" sources under such a test. We have no reason to believe that Congress intended to define such obviously minor sources as "major" for the purposes of the PSD provision.

* * *

IV. PROTECTION OF THE INCREMENTS

The regulations provide that once it is determined that a state implementation plan "is substantially inadequate to prevent significant deterioration or that an applicable increment is being violated," then the SIP must "be revised to correct the inadequacy or the violation." We rule that EPA has authority under the statute to prevent or to correct a violation of the increments, but the agency is without authority to dictate to the States their policy for management of the consumption of allowable increments.

The PSD part of the statute, by its title and by its terms, is designed to prevent significant deterioration of air quality in the nation's "clean air areas" in general, those areas that have or

are presumed to have air quality better than that specified in the applicable primary and secondary national ambient air quality standards (NAAQS). The fundamentals of the statutory approach include differentiation within the clean air areas of Class I, II, and III areas, and specification for each class of areas of maximum allowable increases ("increments") in pollution concentrations for particulate matter and sulfur dioxide, with provision for the Administrator to promulgate allowable increments or similar limitations for other pollutants governed by NAAQS. These provisions set as the threshold of "significant deterioration" for each pollutant in each area the lower of the allowable increment of the applicable NAAQS, and the emphatic goal of the PSD provisions is to prevent those thresholds from being exceeded. It is evident that the principal mechanism for monitoring the consumption of allowable increments and for preventing significant deterioration is the preconstruction review and permit process required for new or modified major emitting facilities by the provisions of section 165. However, we cannot agree with industry's contention that section 165 provides the exclusive mechanism for protection of the increments. The Administrator has authority beyond the provisions of section 165 to prevent or to remedy a violation of the thresholds specified in the Act.

The statutory provisions central to our conclusion are sections 161 and 163(a). Section 161 provides in pertinent part:

each applicable implementation plan shall contain emission limitations and such other measures as may be necessary, as determined under regulations promulgated under this part, to prevent significant deterioration of air quality in each (clean air area).

Section 163 provides in part:

each applicable implementation plan shall contain measures assuring that maximum allowable increases over baseline concentrations of, and maximum allowable concentrations of (sulfur oxides and particulates) shall not be exceeded.

On their face, these provisions establish the thresholds as limitations that are not to be exceeded and contemplate that state implementation plans shall include such measures "as may be necessary" to ensure the observance of this command. The section 165 permit process alone does not ensure that maximum concentrations or allowable increments will not be exceeded. Significant deterioration may occur due to increased emissions from unregulated minor sources and major emitting facilities grandfathered out of the permit process, due to the use of different models to calculate increment consumption, due to the discovery through monitoring that limitations inadvertently have been exceeded, due to redesignation of an area to a more restrictive class, or due to allocation through administrative error of too many permits. Nothing in the plain language of the statute limits the measures in the state implementation plan to the preconstruction permit process.

* * *

The environmental groups have petitioned us to require EPA to promulgate guidelines detailing the manner in which States may permit consumption of the available increments. They also seek to have EPA set aside some portion of the available increments to ensure that current development does not inadvertently cause a violation of the maximum thresholds. EPA has evidenced an intention to promulgate guidelines to help the states manage the allocation of available increments. This is an appropriate step. But this is not to say that the agency may prescribe the manner in which states will manage their allowed internal growth. In the allocation of responsibilities made by Congress, maximum limitations have been set.

These must be observed by the states, but assuming such compliance, growth-management decisions were left by Congress for resolution by the states.

V. SOURCES LOCATED IN NON-ATTAINMENT AREAS

Section 165(a) provides that a PSD permit is required before a major emitting facility “may be constructed in any area to which this part applies.” Industry petitioners contend that this language limits the application of the PSD review requirements to sources constructed in certain locations, and that those locations are the statutorily defined “clean air areas.” On this premise, industry petitioners argue that section 165 does not apply to sources located in the so-called “non-attainment” areas. EPA, on the other hand, takes the position that the identification of “clean air” and “non-attainment” areas in section 107(d) of the Act are only a starting point for the planning process that will lead to revised state implementation plans, that these identifications do not shape the “area” to which the PSD review requirements apply, and that preconstruction review must precede the construction anywhere of a major emitting facility which will adversely affect the air quality of an area to which this part applies. EPA’s regulations extend the permit requirements of section 165 to all sources, wherever located, if the emissions from the source have an *impact* on any clean air area. The issue, then, is whether a source becomes subject to the PSD review process because of its *location* within an area to which this part applies, or because of its *impact* upon the air quality of one.

EPA discovers in the purposes of the Clean Air Act and the 1977 Amendments an authority sufficient to justify its regulation applying section 165 according to impact. It asserts that such a reading is necessary to prevent the significant deterioration of air quality in fact. Section 160(4) sets forth as a purpose of Part C (PSD) “to assure that emissions from any source in any State” (regardless of whether the location of the source is designated an attainment area) “will not interfere with” any portion of the PSD plan for any other State. Clearly, EPA argues, the concern is with the air quality in clean air areas, not with the location of the source affecting that air quality. Finally, the agency contends, Section 161 incorporates the purpose set out in Section 101(b)(1),—to *protect* and enhance the quality of the nation’s air resources—which prompted this Court’s holding in *Sierra Club v. Ruckelshaus*.

* * *

After careful consideration of the statute and the legislative history, we must accept the contention of the industry petitioners that the phrase “constructed in any area to which this part applies” limits the application of Section 165 to major emitting facilities to be constructed in certain *locations*. But, we reject the proposition that the only statutory means available to fulfill the purposes of Part C are the permit provisions of § 165.

The plain meaning of the inclusion in section 165 of the words “any area to which this part applies” is that Congress intended location to be the key determinant of the applicability of the PSD review requirements. That this is the correct interpretation is underscored by the inclusion of the same words in section 165(a)(3)(A), and by the precise language employed by Congress in those provisions where its concern was more source (rather than area) specific.

The legislative history supports our interpretation. The language of the pertinent provision, section 165(a), derives from the original bill reported to the Senate in 1976 by the Public Works Committee. That bill stated in pertinent part that “[no] major emitting facility . . . may be constructed in any area designated under this subsection.” That plainly means location in a designated (clear air) area. In 1977, when Senator Muskie introduced the bill, he said, with respect to its PSD provisions, that it was “in every significant detail identical to last year’s bill.” When the Senate provision limited the PSD permit process to sources in areas

“designated under this subsection,” it was expressly limiting that process to sources located in the areas subject to PSD protection. The Conference bill maintained the principle of the Senate version in that regard, but substituted for the Senate provisions the House provisions which designated the areas subject to PSD protection. Because of this combined approach, the conferees could not refer to areas “designated under this subsection” (or even “section”) because, unlike the Senate bill, the PSD provisions of the Conference bill comprised several sections (§§ 160-169 of Part C). Accordingly, in order to make the intended reference, the language was changed to area “to which this part applies.” This change in language preserved location as a determinant of the applicability of section 165. Therefore, we conclude, as noted above, that the phrase “constructed in any area to which this part applies” limits the application of section 165 to major emitting facilities to be constructed in certain locations.

* * *

Our review of the petitions for reconsideration submitted by both the industry petitioners and EPA has led us to conclude that sections other than section 165 are available to fulfill that congressional objective of the need to cope with the problem of interstate pollution.

Section 110(a)(2)(E)(i) [now § 110(a)(2)(D)(I)] provides a vehicle for implementing the congressional objective of abating substantial interstate air pollution. That provision requires that an SIP shall contain “adequate provisions . . . prohibiting any stationary source within the State from emitting any air pollutant in amounts which will . . . interfere with *measures required to be included in the applicable implementation plan for any other state* under [the PSD part].” The phrase “measures required to be included” in an SIP clearly incorporates at least (1) the absolute emissions limitation for each pollutant for which increment limitations have been set under section 163 or 166, (2) the monitoring and modeling requirements of section 165(e), and (3) “such other measures as may be necessary, as determined under regulations promulgated under [part C],” as provided in section 161. EPA’s authority, under § 110(a)(2)(E)(i), to prevent interstate inference with these measures—to prevent, in other words, the industry of one state from interfering with the PSD program of another—is clear. And, it does not depend upon the permit process of section 165 for its effectiveness.

So also, section 126 of the Act is a vehicle for abating substantial interstate air pollution independent of permitting. That provision allows that, upon petition by a state or political subdivision, the EPA may determine that a source in a neighboring state “emits or would emit any air pollutant in violation of the prohibition of section 110(a)(2)(E)(i).” If such a violation is found, the remedy provided by section 126(c)—which remedy is applicable “[n]otwithstanding any permit which may have been granted by the State” is not denial or revocation of a permit, but a prohibition against construction or operation for a new source and a prohibition against continued operation for an existing source, unless EPA authorizes continued operation for up to three years while the source is being brought into compliance with § 110(a)(2)(E)(i).

* * *

Section 161 provides still another vehicle for implementing the congressional objective of abating substantial interstate air pollution. We realize that, at oral argument, EPA disclaimed invocation of section 161 rulemaking authority to address this problem. However, that disclaimer came at a time when, in the agency’s view, section 165, by its own terms, applied PSD review to sources of interstate air pollution impacting on clean air areas. Given such a view of section 165, the agency’s disclaimer of authority under section 161 was reasonable. We have now held that section 165 does not, by its own terms, apply to sources

located outside of clean air areas. In this light, and in view of the legislative desire to prevent interstate impacts, the authority granted to the EPA by the plain language of section 161—"each [SIP] shall contain emission limitations *and such other measures as may be necessary, as determined under regulations promulgated under this part*, to prevent significant deterioration of air quality [in clean air areas]" grants to the Administrator the power to promulgate rules requiring that SIPs adequately address the problem. We hold that the Administrator may promulgate rules to require the inclusion of such provisions in the SIP of the state whose clean air area is affected, of the state which is the source of the adverse impact, or of both.

* * *

ROBINSON, Circuit Judge:

I. BASELINE DATE

A central feature of the statutory program for the prevention of significant deterioration of air quality in attainment areas, with respect to sulfur dioxide and particulate matter at least, is the establishment of maximum allowable increases, known as increments, in concentrations of pollutants. The increment concept incorporates the idea of a baseline from which deterioration is calculated, by models or monitors, to determine whether it is permissible. Congress has defined with specificity the time and manner in which the baseline for an attainment area is to be determined. The first sentence of Section 169(4), the part now relevant, provides:

The term "baseline concentration" means, with respect to a pollutant, the ambient concentration levels which exist at the time of the first application for a permit in an area subject to [Part C], based on air quality data available in the Environmental Protection Agency or a State air pollution control agency and on such monitoring data as the permit applicant is required to submit.

EPA has acknowledged that the literal purport of the statutory definition is that the starting point for determining the baseline in a particular clean air region is the existing ambient pollution level in that area at the time of the first application for a permit by a major emitting facility. Yet, in a remarkable assertion of administrative power to revise what Congress has wrought, EPA's final regulations define baseline concentration in terms of actual air quality as of August 7, 1977. The Administrator explained this decision as follows:

[T]he regulations promulgated today recognize the severe technical and administrative problems with implementing a definition of baseline concentration that relates to the date of first permit application in an area. The administrator believes that a strict interpretation of the Act's language would create thousands of different areas each with different baseline starting points. Moreover, these areas would eventually overlap as more and more sources applied for PSD permits. The final regulations . . . resolve those problems by establishing a uniform starting date for determining the baseline concentration in all areas.

Without disavowing that rationale, EPA's counsel has offered, as a second justification for the selection of a single date for calculation of the baseline, the following "anomaly":

There is no apparent reason why in one clean air area five "minor" sources constructed at the same time as five "minor" sources in another clean air area should be counted against the increment simply because the first application by a major facility for a PSD permit came at an earlier date in the first area than in the

second.

Industry petitioners, the State of Texas and the District of Columbia urge that EPA's uniform baseline date be set aside and the statutory baseline date reinstated. We agree. EPA has no authority to overrule a clear, consistent congressional directive: "the sound principle of according deference to administrative practice normally applies only where the relevant statutory language is unclear or susceptible of differing interpretations."

The statutory definition of baseline concentration was in no sense a product of legislative inadvertence. Congress focused on how to define the baseline and fully understood the consequences of its chosen resolution. The Conference Committee explicitly acknowledged its adoption of the Senate definition of baseline, and the Senate report had explicitly rejected EPA's uniform date approach. Indeed, it purposely embraced the situation EPA's counsel considers anomalous: "Under this definition [of baseline] it is possible for nonmajor emitting sources to be constructed in the area after the date of enactment without having their emissions affect the ability of major emitters to use the increment available."

This differential treatment of clean air areas, keyed to when the first major emitting facility applies for a permit, is based on a sound, practical consideration. As the Senate explained,

[t]he purpose is to use actual air quality data to establish the baseline. Where sufficient actual data are not available, the State may require the applicant to perform whatever monitoring the State believes is necessary to provide that information. This may involve monitoring for 12 months or more to establish an annual average.

In other words, the task of monitoring existing ambient pollution levels in attainment areas is assigned to the first permit applicant, who will provide the information essential to calculation of the baseline.

The Administrator's recitation of the administrative and technical burdens obviated by a uniform date for the setting of the baseline simply blinks reality. A uniform date for calculating the baseline does not result in establishment of a uniform baseline. Ambient concentration levels of regulated pollutants varied considerably in different clean air areas on August 7, 1977, or any date for that matter, and thus baselines inevitably must differ. EPA's regulations requiring baseline concentration to be figured as of August 7, 1977, must be set aside in favor of the statutory directive to ascertain the baseline in each region as of the date of the first permit application.

* * *

WILKEY, Circuit Judge:

II. "MAJOR MODIFICATION" AND "BUBBLE"

* * *

A. EPA's Regulatory Definition of "Modification"

Standards for PSD review of construction of facilities apply also to the "modification" of any source or facility, as defined by section 111(a)(4). That section of the Act defines "modification" as "any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted."

By regulation EPA has limited PSD review to only those modifications deemed "major"

within the following definition:

“Major modification” means any physical change in, change in the method of operation of, or addition to a stationary source which increases the potential emission rate of any air pollutant regulated under the act . . . by either 100 tons per year or more for any source category identified in [the first sentence of Clean Air Act § 169(1)], or by 250 tons per year or more for any stationary source.

This definition incorporates the same 100 or 250-ton per year threshold that Congress established for the term “major emitting facility.” The regulation differs from the statute by exempting from PSD review any modification that does not exceed this threshold.

For this departure in regulation language, no reasonable basis can be found in the statute. The Act requires PSD review for any construction of a major emitting facility; the same PSD review requirement applies for any modification of a major emitting facility; and the term “modification” is nowhere limited to physical changes exceeding a certain magnitude. . . . We are constrained here to follow the clear language.

EPA does have discretion, in administering the statute’s “modification” provision, to exempt from PSD review some emission increases on grounds of *de minimis* or administrative necessity. The exemption in question, however, has not been so justified, and thus cannot stand.

* * *

B. EPA’s Qualified Application of the “Bubble” Concept of PSD

An important issue under the Act arises from the problem of determining what types of industrial changes will be construed as “modifications” subject to PSD review requirements. Under the Act, the PSD permit and review process applies to construction and modification of major emitting facilities. As discussed in the previous section, the Act defines “modification” as any physical or operational change in a stationary source which “increases the amount of any air pollutant emitted by such source.” There are two possible ways to construe the term “increases.” First, one can look at any change proposed for a plant, and decide whether the net effect of all the steps involved in that change is to increase the emission of any air pollutant—this is commonly termed the “bubble” concept. Second, one can inspect the individual units of a plant, which are affected by an operational change, and determine whether any of the units will consequently emit more of a pollutant. In its regulations, EPA has adopted a qualified form of the “bubble” concept for defining modifications subject to PSD review.

Congress did not, in any pertinent part of legislative history, specify which of these two constructions was to be controlling; but an analysis of the implications of the two possible interpretations shows the second to be unreasonable and contrary to the expressed purposes of the PSD provisions of the Act. It is important first to recognize that alterations of almost any plant occur continuously; whether to replace depreciated capital goods, to keep pace with technological advances, or to respond to changing consumer demands. This dynamic aspect of American industry was not disputed by the parties. To apply the second construction of “increases,” however, would require PSD review for many such routine alterations of a plant; a new unit would contribute additional pollutants, these increases could not be set off against the decrease resulting from abandonment of the old unit, and thus the change would become a “modification” subject to PSD review. Not only would this result be extremely burdensome, it was never intended by Congress in enacting the Clean Air Act Amendments.

The intent of the relevant portion, Part C, of the Clean Air Act as amended in 1977, is

succinctly stated by the title of that part: "Prevention of Significant Deterioration of Air Quality"—in areas that currently attain air quality standards. According to their stated purposes, the PSD provisions seek "to assure that any decision to permit *increased* air pollution *in any area* to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision-making process."

Congress wished to apply the permit process, then, only where industrial changes might increase pollution in an area, not where an existing plant changed its operations in ways that produced no pollution increase. It is true that Congress intended to generate technological improvement in pollution control, but this approach focused upon "rapid adoption of improvements in technology as new sources are built," not as old ones were changed without pollution increase. The interpretation of "modification" as requiring a net increase is thus consistent with the purpose of the Act; while the other interpretation is not. The EPA has properly exempted from best available control technology (BACT) and ambient air quality review those "modifications" of a source that do not produce a net increase in any pollutant. Within the terminology of the Act, of course, industrial changes meeting this standard are not "modifications" at all.

* * *

The Agency retains substantial discretion in applying the bubble concept. First, any offset changes claimed by industry must be substantially contemporaneous. The agency has discretion, within reason, to define which changes are substantially contemporaneous. Second, the offsetting changes must be within the same source, as defined by EPA. In light of the statutory intent to treat modification the same as construction, EPA's definition of "statutory source" for the PSD provisions will govern both the definition of "modification" and the coverage of section 169(1).

The Agency's regulations, however, impose on the use of the bubble concept an additional limitation, which is challenged in this case. The regulations define "major modification" by means of accumulated increases in potential emissions after 7 August 1977, with no offset allowed for contemporaneous emission decreases. The effect of this definition is to subject major changes to PSD review, even when they are offset by contemporaneous reductions. The only effect of the EPA's bubble concept then is to exempt the facility from certain substantive review standards when there are such offsetting changes, leaving the facility subject to all procedural PSD requirements. The most important procedural requirement is that a permit be issued, under section 165 of the Act, before construction begins. Under the Act, however, PSD procedural requirements, just like substantive ones, apply only to construction and modification of sources. We must therefore resolve the question whether EPA has authority to impose procedural requirements where there is no net increase of any pollutant from contemporaneous changes.

The Agency concedes that a literal reading of the Act would allow exemption from all PSD review requirements for offsetting changes. But it argues that a total exemption from section 165 requirements would contravene the basic purpose of the 1977 Amendments. We disagree.

There is no basis in the Act for establishing two different definitions of "modification," one that looks only at net increases for substantive requirements, and a second that looks at all increases, without allowing offsets, for procedural requirements. If a particular set of industrial alterations is not a "modification" within the terms of the Act, then it is subject to neither procedural nor substantive PSD requirements.

The Act gives the EPA Administrator authority “to prescribe such regulations as are necessary to carry out his functions” under the Act. The Agency argues that the permit process is necessary to ensure that it receives information about industrial plans, so that it can decide whether proposed emission increases are in fact offset. But the PSD provisions set several thresholds, below which Agency review authority does not extend. The 100 and 250-ton per year limit for “major emitting facilities” is one such threshold. The logic of the Agency’s argument would justify permit requirements for any industrial action that falls below any of the thresholds. Rather than allow such an extension of Agency review authority, Congress has set clear limits outside which PSD review does not apply. If industries falsely claim to be below the thresholds for PSD applicability, there exist means to uncover and penalize such abuses. An extension of PSD permit requirements beyond the wording of the Act is therefore neither necessary nor appropriate to carry out EPA’s functions under the Act. Such extension would seriously delay and impede industrial changes that Congress did not intend to regulate. Where there is no net increase from contemporaneous changes within a source, we hold that PSD review, whether procedural or substantive, cannot apply.

* * *

NOTES

1. The *Alabama Power* decision consumes 88 pages in the Federal Reporter. The problems it raises are so numerous and complex that portions of the opinion are written by each of the three judges who heard the case.

2. The court finds that the permit requirements of § 165 apply only to those major emitting facilities located in “clean air” areas. EPA had argued, on the basis of § 161 of the Act, that the requirements should extend to all major emitting facilities that adversely impact clean air areas. In the same part of the opinion, however, the court held that EPA may impose virtually any requirements, including those at § 165, on facilities in one state that adversely affect a clean air area of another state. The court finds support for this holding in the language of § 110(a)(2)(E) (now § 110(a)(2)(D)) which authorizes EPA to require measures necessary to prevent the significant deterioration of air quality in another state. *Alabama Power*, 636 F.2d at 366-367. Compare the language of § 110(a)(2)(D) with the language of § 161. Is there any rational basis for the court’s holding that EPA may impose PSD requirements on facilities in nonattainment areas only if it adversely affects a clean air area in another state?

3. Despite his disagreement with the court’s interpretation of this aspect of EPA’s rules, Professor Currie notes that the ruling should have little practical effect. DAVID P. CURRIE, *AIR POLLUTION: FEDERAL LAW AND ANALYSIS* § 7.03 (1981). As EPA has noted “PSD rules apply in any area where at least one NAAQS is attained, and since virtually every area in the country show attainment for at least one pollutant, the PSD review will be a requisite virtually everywhere.” 43 Fed. Reg. 8963 (1978).

4. Several issues addressed in the *Alabama Power* opinion which are not reproduced in the text are nonetheless worthy of note.

a. Fugitive Emissions. Fugitive emissions are emissions that escape from a facility from other than a point source. Resource development activities such as mining and forestry typically contribute substantial fugitive emissions to the ambient air. The PSD requirements

of the statute are limited to “major emitting facilities.” These are defined at § 169(1) of the Act to encompass any of 28 specified categories of sources “which emit, or have the potential to emit 100 tons per year or more of any air pollutant” The definition also encompasses “any other source with the potential to emit 250 tons per year or more of any air pollutant. . . .” No mention is made of sources of fugitive emissions in § 169(1). In the general definition section of the statute, however, “major emitting facility” is defined “except as otherwise expressly provided” to include any “source of air pollutants which . . . emits, or has the potential to emit 100 tons per year of any air pollutant (including any . . . source of fugitive emissions, . . . as determined by rule by the Administrator).” § 302(j). EPA promulgated rules which required major sources of fugitive emissions in PSD areas to meet the BACT requirement, but required no showing that emissions from the source would not result in a violation of the NAAQS or the allowable increments. The court held that § 169(1) did not “expressly” modify § 302(j). Thus, major sources of fugitive emissions fell within the jurisdictional limits of § 302(j), subject to that section’s “rule” requirement for fugitive emissions, 636 F.2d at 370. Following the court’s decision in this case, the EPA promulgated rules setting fugitive emission standards for 27 categories of facilities. The EPA’s failure to include strip mines among these 27 categories was unsuccessfully challenged in *Natural Resources Defense Council v. EPA*, 937 F.2d 641 (D.C. Cir. 1991), the second case that follows in the text.

b. Monitoring.

(1) Preconstruction Review: For What Pollutants? Section 165(e)(1) of the Act requires that preconstruction review of a facility “shall be preceded by an analysis . . . for each pollutant subject to regulation under this Act which will be emitted” from the facility. EPA’s rules required monitoring only for those pollutants for which NAAQS have been established. The court held that the Act required some form of preconstruction analysis (presumably monitoring or modeling) for all pollutants regulated under the Act, subject to certain express monitoring requirements in § 165(e)(2). 636 F.2d at 371.

(2) Preconstruction Review: For What Purpose? Section 165(e)(2) of the Act provides that the analysis required by § 165(e)(1) “shall include continuous air quality monitoring . . . for purposes of determining whether emissions . . . will exceed the maximum allowable increases or the maximum allowable concentrations permitted” EPA had promulgated rules requiring monitoring only to determine whether an applicable NAAQS has been exceeded. The court found these rules inadequate. 636 F.2d at 372. What more was required?

(3) Post-Construction Review. Section 165(a)(7) provides as a condition of permit approval that the applicant “conduct such monitoring as may be necessary. . . .” Pursuant to this provision EPA had imposed no general requirement for post-construction monitoring. The court upheld EPA’s decision against a challenge from several environmental plaintiffs on the grounds that the monitoring requirement of § 165(a)(7) (unlike the requirements of § 165(e)(1) and (2)) is discretionary. 636 F.2d at 373.

c. Applications of PSD Requirements to All Pollutants Emitted By a Major Facility. EPA promulgated rules which limited the applicability of PSD requirements to those pollutants for which the proposed construction would be a major source or a major modification. Thus, for example, under the EPA rules, a proposed primary copper smelter that would emit 150 tons/year of sulfur dioxide and 50 tons/year of particulates would only have to meet PSD requirements, including BACT, for sulfur dioxide and not for particulates. The court held the rule invalid. “Section 165 states that no major emitting facility may be constructed [in a clean

air area] unless it is subject to BACT ‘for each pollutant subject to regulation under this Act emitted from . . . such facility.’” 636 F.2d at 405.

5. Bubbles. One of the more controversial policy decisions made by EPA in recent years was its provision for treating emissions from one large facility as one source for purposes of regulation under the Clean Air Act. All emission points within the facility are considered as if they are under a bubble, with one source emanating from the bubble. As described in the *Alabama Power* decision, this policy cuts two ways. First, by encompassing within the meaning of a single “source” all units on contiguous or adjacent properties which are commonly owned or controlled, EPA broadened the scope of new facilities that fall within the 100/250 ton/year jurisdictional requirement for PSD review. On the other hand, by treating all sources under the “bubble” as a single source, a facility can avoid PSD review for modifications of the facility if it can offset emissions from one or more points sufficiently to keep the increase in pollutants below the 100/250 ton/year threshold. Both of EPA’s bubble policies as applied to the PSD program were sustained by the court. 636 F.2d at 396-397, 400-402. The Supreme Court has addressed the bubble concept in a different context in *Chevron, U.S.A., Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984), *infra* at Chapter 9.

6. The definition of “major emitting facility” at § 169(1) of the Act authorizes the state to exempt new or modified facilities operated by nonprofit or educational institutions from the PSD requirements of the Act. The Court of Appeals for the First Circuit upheld such an exemption obtained by Harvard College from the State of Massachusetts against a challenge by a local community and several of its residents. *See Town of Brookline v. Gorsuch*, 667 F.2d 215 (1st Cir. 1981).

7. In states without an approved PSD permit program (§ 110(a)(2)(C)), EPA may nonetheless delegate PSD permitting authority to the state. *See In the Matter of Pennsauken County, New Jersey Resource Recover Facility*, PSD Appeal No. 88-8, 1988 PSD LEXIS 8 (1988). All such permits, however, are considered to be EPA-issued under federal law, and federal administrative review procedures apply. The regulations at 43 C.F.R. Part 124 govern the issuance, public comment, and review of PSD permits. These rules are part of EPA’s consolidated permit program which allow the consolidation of several different kinds of EPA permits from different programs into a single process. 40 C.F.R. § 124.4. Under EPA’s rules, the public must be afforded a minimum of 30 days following public notice to comment on an application. *Id.* at § 124.10(b). A public hearing may also be held. Within 30 days from a permit decision a person who filed comments or participated in a public hearing on the application may petition the EPA’s Environmental Appeals Board (EAB) to review the decision. *Id.* at § 124.19(a). A person who did not participate in the comment process may also petition for review, but may only raise issues relating to changes from the draft to the final permit. *Id.* at § 124.19. Decisions of the EAB are final agency action and cannot be appealed further to the Administrator. 57 Fed. Reg. 5321 (1992); *see also*, Nancy B. Firestone, *The Environmental Protection Agency’s Environmental Appeals Board*, ENVTL. LAW. 1, 4 (1994). EAB decisions are available on WESTLAW and LEXIS and are published in the *EPA Administrative Law Reporter*.

8. Unlike LAER, which applies only to those pollutants for which an area is out of attainment, sources subject to § 165 have generally been required to meet BACT “for each pollutant subject to regulation under this chapter.” § 165(a)(4). The 1990 Amendments, however, provide that pollutants listed under § 112 as hazardous air pollutants are not subject

to the PSD program. Presumably then, the MACT standards which apply to hazardous air pollutants will override the BACT standards. Suppose, however, that MACT standards have not yet been promulgated for a particular hazardous air pollutant. Can a major emitting facility avoid both BACT and MACT for such pollutants until MACT standards are adopted? *See In the Matter of Robbins Resource Recovery Company*, PSD Appeal No. 90-8A, 1991 PSD LEXIS 2 (1991).

9. EPA has traditionally followed a “top down” approach to determine the appropriate technology for a source subject to BACT. EPA has explained this approach as follows:

The first step in this approach is to determine, for the emission source in question, the most stringent control available for a similar or identical source or source category. If it can be shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental or economic objections. Thus, the “top-down” approach shifts the burden of proof to the applicant to justify why the proposed source is unable to apply the best technology available. It also differs from other processes in that it requires the applicant to analyze a control technology only if the applicant opposes that level of control; the other processes required a full analysis of all possible types and levels of control above the baseline case.

In the Matter of Pennsauken County, New Jersey Resource Recover Facility, PSD Appeal No. 88-8 at 5-6, 1988 PSD LEXIS 8 (1988). The American Paper Institute and the National Forest Products Association filed a lawsuit against the EPA alleging that the “top-down” policy was inconsistent with the law and that it could only be adopted through notice and comment rulemaking. On July 28, 1991, EPA announced that it had reached a proposed settlement in the case and opened the proposal to public comment. 56 Fed. Reg. 34,202 (1991). Under the terms of the settlement, EPA agreed to propose new rules to revise or clarify the regulations defining BACT (40 C.F.R. §§ 51.166(j), 52.21(j)) and the manner in which BACT determinations should be made. Although the agreement called for proposed rules by January 10, 1992, proposed rules were not finally promulgated until July 23, 1996. 61 Fed. Reg. 38,250 (1996). The proposed rules would retain the top down approach. *See id.* at 38,273, 38,282. Final rules are scheduled for promulgation in the Spring, 1998.

**KERR-MCGEE CHEMICAL CORP. v.
U.S. DEPARTMENT OF THE INTERIOR**
709 F.2d 597 (9th Cir. 1983)

EUGENE A. WRIGHT, Circuit Judge:

This case presents the question whether, under section 164(d) of the Clean Air Act Amendments of 1977, a recommendation by the Department of Interior has caused injury to Kerr-McGee sufficient to give it standing and create a case ripe for decision. The district court decided that Kerr-McGee had been injured and granted its motion for summary judgment. We reverse and remand with instructions to dismiss because Kerr-McGee has not demonstrated

that legally cognizable injury results from Interior's recommendation.

FACTS

Under section 164 of the Clean Air Act Amendments of 1977, the states alone have the power to change the air quality designations of federal lands within their boundaries. Certain federal lands, such as national monuments, may be redesignated only from Class II to Class I, the strictest pollution control category. *Id.*

Section 164(d) of the amendments requires the federal land manager to review specified federal lands to determine whether redesignation is appropriate. In 1980, the Department of the Interior, the land manager for Death Valley National Monument, recommended that California redesignate Death Valley from Class II to Class I. 45 Fed. Reg. 43,002 (1980).

Following Interior's recommendation, Kerr-McGee brought this declaratory judgment action against Interior and the State of California. It has pending a permit application to expand its chemical processing plant in California's Searles Valley, about 18 miles from the boundary of Death Valley. In theory, at least, the Searles facility and expansion may be subjected to increased pollution controls if California follows Interior's recommendation and redesignates Death Valley.

Kerr-McGee alleged that Interior had not complied with the requirements of section 164(d) because it had considered only whether "air quality related values" were an important attribute of Death Valley. It argued that section 164(d) required Interior to assess in addition the health, environmental, economic, social, and energy effects of redesignation before making a recommendation to California.

Kerr-McGee asserted that the statute precluded action by California until Interior made a "lawful" analysis. It contended also that the recommendation under section 164(d) acted as a "trigger" to state action on redesignation, setting in motion a chain of events that would affect drastically its Searles operations. These effects included delay in processing the permit application, the skewing of proceedings in favor of redesignation, and the likelihood that the plant would face stricter emission standards.

Finally, Kerr-McGee contended that Interior violated the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. §§ 4321-4347; §§ 4361-4370, by not preparing an Environmental Impact Statement (EIS) for the recommendation. It argued that the recommendation, which was forwarded to Congress, was a proposal for legislation that required an EIS. *See* 42 U.S.C. § 4332(C).

California and Interior moved to dismiss. Among other arguments, they contended that the claims were barred by the standing and ripeness doctrines. They argued that the federal recommendation caused Kerr-McGee no injury because section 164 allowed California to act without any recommendation, and allowed it to ignore the recommendation once made.

The court concluded that Kerr-McGee had alleged injuries sufficient to confer standing. It noted that Kerr-McGee alleged that California had delayed action on the permit application because of the federal recommendation. It concluded that ripeness did not bar the suit because the federal action was "final agency action" within the meaning of the Administrative Procedure Act, and because California apparently planned to initiate redesignation proceedings.

On the merits, the court granted summary judgment to Kerr-McGee and ruled that Interior had not considered the relevant factors in making its recommendation. Although it did not rule that the recommendation "triggered" action by California, it held that a lawful recommendation was a prerequisite to redesignation.

* * *

STANDING AND RIPENESS

On appeal, California and Interior have renewed their contentions that the standing and ripeness doctrines bar Kerr-McGee's claims. Because standing and ripeness are jurisdictional issues, we must consider them first.

* * *

Both standing and ripeness require some demonstration of injury. Standing requires that the plaintiff show that the challenged action has caused it threatened or actual injury. *See Gladstone Realtors v. Village of Bellwood*, 441 U.S. 91, 99 (1979).

To determine ripeness, the court assesses the appropriateness of the issue for judicial resolution and the hardship that will result from the denial of relief at this stage. *Toilet Goods Association v. Gardner*, 387 U.S. 158, 1627 (1967). Even when the agency action challenged is "final" and the issues raised are purely legal, a case is not ripe for adjudication absent the threat of significant and immediate impact on the plaintiff. *Id.* at 162-64, 87 S.Ct. at 1523-25.

In effect, the issues of standing and ripeness here merge into a determination whether the federal recommendation has injured Kerr-McGee. *See* 4 K. Davis, *Administrative Law Treatise* 350 (1983). If not, we have no jurisdiction.

A. Source of Kerr-McGee's Injury

Kerr-McGee has alleged no direct injury resulting from the federal recommendation. It admits that California retains ultimate control over the decision to redesignate Death Valley and that the direct source of its injury will be action or inaction by the state.

Instead, Kerr-McGee argues that the statute establishes a causal relationship between the recommendation and injurious action by California. It asserts that under section 164, the federal recommendation triggers state action on redesignation and makes redesignation's "harmful" effects inevitable.

It argues also that the recommendation is a statutory prerequisite to action by California, an interpretation accepted by the district court. If this is correct, the recommendation has harmed Kerr-McGee because it allows California to act when otherwise it could not.

* * *

The question whether Kerr-McGee has been injured depends on the effect upon state proceedings of a federal recommendation under section 164(d). We must examine the statute and make a partial determination on the merits to decide whether we have jurisdiction.

* * *

B. The Recommendation as a Prerequisite

Section 164(d) provides that the "Federal Land Manager shall review all national monuments. . . and shall recommend any appropriate areas for redesignation as Class I where air quality related values are important attributes of the area." Although the section requires that the land manager consult with the appropriate states before making a recommendation, its language does not suggest that the recommendation acts as a prerequisite.

* * *

Examination of the statute and its background convinces us that the district court erred in deciding that federal recommendation was a prerequisite to redesignation by California. In enacting the 1977 Clean Air Act Amendments, Congress stated specifically that it was

removing the federal land manager's power to control classification of federal lands. H.R. Rep. No. 294, 95th Cong., 1st Sess. 7-8, *reprinted in* 1977 U.S. Code Cong. & Ad. News 1077, 1085.

* * *

The statute leaves the state free to act without a recommendation if the federal government does not respond within 60 days. Even if the land manager responds with a recommendation, the state may redesignate against the federal recommendation if it lists and explains the inconsistencies between the state and federal positions. § 164(b)(1)(B). Because California can act independently of and inconsistently with the recommendation, we conclude that the court erred in holding that the recommendation was a prerequisite to redesignation.

We disagree also with the conclusion that the federal recommendation is surplusage merely because the state may reject it. The structure of the statute reveals that Congress intended redesignation to be a cooperative effort between the state and the federal government, with final authority in the state.

The mandatory review of federal lands required by section 164(d) places the federal government on record regarding redesignation. When and if the state decides to redesignate, the recorded federal recommendation allows the state to fulfill quickly its duty under section 164(b)(1)(B) to consult with the federal government. The recommendation does play a role in facilitating the redesignation process without restricting state action.

C. The Recommendation as a Trigger

We consider next Kerr-McGee's contention that the recommendation "triggers" state action on redesignation. Kerr-McGee alleges that the triggering effect injures it because California will not act on permit applications until the conclusion of redesignation proceedings.

There is no basis in the statute for a "trigger" interpretation. The statute allows states to initiate redesignation proceedings. § 164(a). It does not suggest that federal land managers may initiate redesignation or that the states must act once a federal recommendation has been made.

* * *

California may or may not plan to redesignate Death Valley and "injure" Kerr-McGee in the manner alleged. The federal recommendation, however, is purely advisory and is neither a trigger nor a prerequisite to California's action. It subjects Kerr-McGee to no federal control or regulation, and has caused the company no injury. Without an injury, Kerr-McGee has no standing and its claim is not ripe for decision.

We reverse and remand to the district court with instructions to dismiss for lack of jurisdiction.

NOTES

1. Section 162 of the Act designates as Class I areas all international parks, national wilderness areas and national memorial parks in excess of 5,000 acres, and national parks in excess of 6,000 acres, so long as those areas were in existence on August 7, 1977. These Class I areas may not be redesignated. All such areas that are created after August 7, 1977 are subject to redesignation by the states under § 164 of the Act. However, certain protected federal lands (such as national monuments and post-1977 national parks) in excess of 10,000

acres may only be redesignated as Class I or Class II.

2. Indian reservations may only be redesignated by the appropriate Indian governing body. § 164(c). In *Nance v. EPA*, 645 F.2d 701 (9th Cir. 1981) the court sustained the authority of the Cheyenne Tribe to redesignate the Northern Cheyenne Reservation in Montana from Class II to Class I. Westmoreland Resources and other companies with coal interests in the region had protested the redesignation on the grounds that it might unduly interfere with their plans to conduct strip mining operations in the area. The court held: (1) that neither the Tribe's decision nor EPA's approval of the decision was arbitrary and capricious; (2) that neither EPA nor the Secretary of the Interior had breached its fiduciary duty owed to the neighboring Crow Tribe in approving the redesignation; (3) that the delegation of authority to Indian tribes to redesignate their reservation lands was not unlawful under either the Clean Air Act or the federal Constitution; and (4) that the question of whether the property rights of the plaintiffs had been "taken" in violation of the Fifth Amendment was not ripe for review.

3. Redesignation of an area to Class III is permitted only where "such redesignation will not cause, or contribute to, concentration of any air pollutant which exceeds any maximum allowable increase or maximum allowable concentration permitted under the Class of any other area." § 164(a)(2)(B). Consider how states might use this provision to limit redesignation and development in bordering states. For example, could Nebraska designate its western border as a Class I area and thereby limit industrial development in eastern Wyoming? See § 165(d)(2)(C)(i).

4. Where disputes arise between states and Indian tribes over classification of lands, the governor of the affected state or the ruling body of the affected Indian tribe may request that the EPA Administrator resolve the dispute. The Administrator's resolution is binding on the affected governments. § 164(e).

5. As suggested by *Kerr-McGee*, the Act imposes on federal land managers (FLM) "an affirmative responsibility to protect the air quality related values (including visibility) of any . . . lands within a Class I Area . . ." § 165(d)(2)(B). To implement this requirement, the Act requires EPA to notify the FLM manager of any permit applications for major emitting facilities which might affect a Class I area over which the FLM has responsibility. § 165(d)(2)(A). "Where the Federal Land Manager demonstrates *to the satisfaction of the state* that the emissions from such facility will have an adverse impact on the air quality-related values (including visibility) of such lands . . . a permit shall not be issued." § 165(d)(2)(C)(ii) (emphasis added). Note that this prohibition applies even where the new facility would not cause violations of the PSD increments. Conversely, however, "where the owner or operator of a facility demonstrates to the satisfaction of the Federal Land Manager . . . that the emissions from such facility will have no adverse impact on air quality-related values . . . the state may issue the permit," even though the emissions may result in pollution that exceeds the Class I increments. § 165(d)(2)(C)(iii). In this case, however, the emissions from such a facility may not result in pollution that exceeds other increments established under the law which are roughly equivalent to Class II increments. § 165(d)(2)(C)(iv). If the FLM refuses to certify a facility under § 165(d)(2)(C)(iii), the Governor of the affected state may, with the concurrence of the FLM, grant a variance from the three-hour and 24-hour SO₂ standards. § 165(d)(2)(D)(i). If the FLM refuses to concur, the Governor may apply to the President for approval of the variance. § 165(d)(2)(D)(ii). The President may grant a variance only upon finding that it is in the national interest. *Id.*

6. In *Old Dominion Electric Cooperative*, 3 E.A.D. 779 (1992), the Environmental Appeals Board made clear that “[w]hile the permit issuer must give reasonable consideration to a Federal Land Manager’s assertion of an adverse impact, the final decision rests with the permitting authority.” But “[s]tates do not have unfettered discretion to reject an FLM’s adverse impact determination. If a state determines that an FLM has not satisfactorily demonstrated an adverse impact on AQVRs from the proposed facility, the state must provide a “rational basis” for such a conclusion, given the FLM’s affirmative responsibility and expertise regarding the Class I areas within their jurisdiction. Arbitrary and capricious rejections of adverse impact determinations are not sustainable.” *Hadson Power 14 - Buena Vista*, 4 E.A.D. 258 (1992). How difficult do you think it will be for a state to overcome an adverse impact determination made by the FLM?

7. In 1996, the EPA proposed regulations that would, for the first time, define “air quality related value.” As proposed, that term would mean “* * * visibility or a scenic, cultural, physical, biological, ecological, or recreational resource that may be affected by a change in air quality, as defined by the Federal Land Manager * * *.” 61 Fed. Reg. 38,332 (1996) (*to be codified at* 40 C. F. R. § 51.166(b)(40)). “Adverse impact on air quality related values” is proposed to be defined as “a deleterious effect on any air quality related value identified by a Federal Land Manager, resulting from emissions from a proposed major source or major modification, that interferes with the management, protection, preservation, or enjoyment or a Federal Class I area. * * *.” *Id.* (*to be codified at* 40 C. F. R. § 51.166(b)(41)). The proposed rules also seek to clarify the respective roles of the FLM and the permitting authority under § 165 of the Act. Among other things, the proposed rules would require permitting authorities to notify the FLM of any PSD permit application for facilities within 100 kilometers of a Federal Class I area. *See* 61 Fed. Reg. 38,287 (1996) (*to be codified at* 40 C.F.R. § 51.166(p)(4)(i)). A data base would also be developed that would allow interested persons, including FLMs, to obtain information about all other PSD permit applications. The FLM would also be guaranteed a minimum of 30 days to comment on an application before the permitting authority determines that the application is complete. *Id.* at 38,288 (*to be codified at* 40 C.F.R. § 51.166(p)(5)). Finally, if the permitting authority decides to reject the FLM’s finding of an adverse impact on an AQVR, the specific reasons for rejecting the FLM’s finding would have to be explained in writing and made available to the public. *Id.* at 38,290 (*to be codified at* 40 C.F.R. § 51.166(p)(6)(iii)).

NATURAL RESOURCES DEFENSE COUNCIL V. EPA

937 F.2d 641 (D.C. Cir. 1991)

STEPHEN F. WILLIAMS, Circuit Judge:

Surface coal mining operations throw up dust. This “fugitive dust” comes primarily from traffic on unpaved “haul roads” and from wind erosion, *see “Requirements for Implementation Plans: Surface Coal Mines and Fugitive Emissions”*, 54 Fed. Reg. 48,870, 48,879/2 (1989), and it accounts for virtually all of the air pollution generated at surface coal mines. *Id.* at 48,875/2. We deal here with a decision of the Environmental Protection Agency concluding that such fugitive emissions should not count in identifying facilities that are so “major” as to

trigger application of the Clean Air Act's provisions on "prevention of significant deterioration" ("PSD"), §§ 160 *et seq.*

The PSD provisions impose stringent permit requirements on construction of any new "major emitting facility" in an area that has attained compliance with national ambient air quality standards. § 165; *see also* § 169(2)(C) (defining "construction" to include modification of an existing source). The Act defines such facilities as plants of certain listed types that produce 100 tons or more of any air pollutant per year, together with "any other source with the potential to emit two hundred and fifty tons per year or more of any air pollutant." § 169(1). Most surface coal mines of economically viable size have the potential to emit more than 250 tons of dust. *See "Requirements for Preparation, Adoption and Submittal of Implementation Plans*, 49 Fed. Reg. 43,211, 43,212/1 (1984).

In *Alabama Power Co. v. Costle*, 636 F.2d 323, 369-70 (D.C. Cir. 1979), however, we held that § 169(1)'s definition of "major emitting facility" was limited by the Clean Air Act's generic definition, § 302(j), which reads as follows:

Except as otherwise expressly provided, the terms "major stationary source" and "major emitting facility" mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, *as determined by rule by the Administrator* [of the EPA]).

Id. (emphasis added). The result, we held in *Alabama Power*, is that calculation of § 169(1)'s 250-ton threshold "may include fugitive emissions only as determined by rule by the Administrator." 636 F.2d at 370. The primary issue before us is the scope of the Administrator's authority in making that determination.

In 1984 EPA promulgated a list of 27 categories of industrial stationary sources for which fugitive emissions are to be included in determining whether a source is "major". *See "Requirements for Preparation, Adoption and Submittal of Implementation Plans"*, 49 Fed. Reg. 43,202, 43,208-10 (1984). It simultaneously issued a companion notice proposing to add surface coal mines to the list. *See id.* at 43,211. In the end, it declined to add them, *see* 54 Fed. Reg. at 48,870, relying primarily on a finding that the socioeconomic costs of regulating the mines would outweigh any environmental benefits. *Id.* at 48,879/3. The petitioners argue that cost-benefit is not the right standard, and that in any event, it would, if correctly applied, require EPA to count coal mines' fugitive emissions when identifying major emitting facilities, at least in some circumstances.

We find EPA's construction of the relevant statutory language permissible, and we uphold its application of cost-benefit analysis.

* * *

The petitioners claim that Congress clearly expressed an intent in § 302(j) to impose a nondiscretionary duty on EPA to subject *all* sources of fugitive emissions to the full panoply of PSD and nonattainment requirements. In their view, the provision's "by rule" requirement contemplates nothing more than the simple ministerial task of determining which sources have the potential to emit more than the threshold limit. *See* 49 Fed. Reg. at 43,206/1. As surface coal mines concededly fall within this category, they claim that EPA *must* subject them to the permit requirements of the PSD rules.

Not surprisingly, petitioners do not stress the language of § 302(j). It appears to constrain

the Administrator's discretion only by requiring that he act "by rule". Petitioners instead point to four passages from a House committee report (accompanying its version of the bill that led to the 1977 amendments), which in their view expressed Congress's "intention on the precise question at issue", *Chevron U.S.A. v. NRDC*, 467 U.S. 837, 843 n. 9, (1984). We find nothing remotely approaching such an expression of intent.

1. In summarizing the changes to be wrought by the proposed amendments, the House Committee observed that the "major stationary source" definition is clarified to indicate the inclusion of major sources of fugitive emissions (last year's bill was unclear in this respect). H. Rep. 95-294 at 4 (1977) [citations omitted]. Of course, no one disputes that the new definition of "major stationary source" included language on fugitive emissions. The question is what it meant—whether the EPA Administrator was authorized to "determine" under what circumstances such emissions should be included, or only to perform some technical task; the cited passage provides not a clue.

2. The House report made reference to § 169(1)'s explicit authority for *states* to exempt nonprofit educational and health institutions that would otherwise qualify as "major" emitting facilities. See House Report at 144-45 [citations omitted]. Petitioners argue that this "enumeration of specific regulatory exemptions" precludes the implication of others. But the issue is EPA's authority, not the states', and EPA is applying § 302(j), as construed in *Alabama Power*, not § 169(1). Further, EPA claims not that Congress exempted coal mines, but only that Congress gave EPA discretion whether to include them (and other sources of fugitive emissions).

3. The House bill contained a provision authorizing a state's governor to exclude "naturally occurring particulate matter" from the computation of an area's compliance with the emission ceilings permitted by the PSD that come into play once a major emitting facility is licensed.¹ See H. Rep. 95-294 at 402-03 (1977), *reprinted in* 4 Leg. Hist. at 2869-70. Of course, this provision does not relate to the distinct problem of inclusion of fugitive emissions for purposes of the definition of a major emitting facility. Moreover, it did not survive. While in existence, however, it served as grist for the committee's defense to claims that the amendments would limit the size or operation of large surface coal mines:

"Naturally occurring particulate matter" includes dust resulting from wind erosion of fields, farms, or open strip mines prior to or during reclamation. (Of course, the committee does not intend to exempt particulate emissions resulting from the mining process itself, dust created by moving vehicles, or from other coal-processing related activities.)

H. Rep. 95-294 at 165 (1977).

* * *

Petitioners grasp at the parenthetical as evidence that the Administrator's § 302(j) authority is not as broad as it appears. But the committee's recognition that this aborted gubernatorial authority did not itself *exempt* surface coal mines is quite consistent with the

¹ In order to obtain a PSD permit an applicant proposing a new or modified "major" source must demonstrate that the proposed source will not cause ambient pollution concentrations to rise above the statutorily specified "increment." Once the PSD baseline date is triggered by the first PSD permit application in the area, all increases in actual emission consume the permissible amount regardless of their source. See *Alabama Power*, 636 F.2d at 361-64.

Administrator's understanding of his authority to define the circumstances when fugitive emissions are to be included in the definition of a major emitting facility.

4. Finally, the House committee stated that the ultimate decision on whether to classify the lands or to grant a permit to a proposed strip mine will rest with the state, just as it does with other proposed sources. House Report at 166 [citations omitted]. The petitioners read this passage as grouping surface coal mines with the categories of industrial sources expressly made subject to PSD requirements by § 169(1). Again, they ignore context. Responding to concerns over the effects of the proposed bill on energy resources, the committee was discussing the availability of various sources of state flexibility. It noted the ill-fated gubernatorial authority to exclude naturally occurring particulate matter and the states' authority to reclassify affected lands to allow a higher increment. The passage contains no discussion of the conditions under which surface coal mines (or other fugitive emission sources) would in fact be subject to PSD requirements. It simply argues that even if mines are listed, they will still be feasible by virtue of authorities granted the states.

Thus, while the statutory language and legislative history do not bar petitioners' construction, they provide little support and no necessity for it. In fact, if petitioners are correct that the only prerequisite to PSD regulation is a determination that an industry's plants might pollute more than the threshold limit, one wonders why Congress thought it necessary to force EPA through burdensome rulemaking hoops—what issues did it expect to be illuminated by public participation?

We must next determine whether the agency's construction is a permissible one. *Chevron*, 467 U.S. at 845. EPA concluded that Congress intended it to make two findings before requiring inclusion of fugitive emissions in the threshold applicability determinations for sources in a particular category: "(1) That the sources have the potential to degrade air quality significantly and (2) that no unreasonable socioeconomic impacts relative to the benefits would result from subjecting the sources to [PSD requirements]." 49 Fed. Reg. at 43,208/1.

As we noted above, Congress placed no explicit constraints on the rulemaking discretion of the EPA Administrator; he is to act "as [he] determine[s]". Nor is the issue addressed in the legislative history. So long as the agency construction represents a reasonable accommodation of conflicting congressional policies, *see Chevron*, 467 U.S. at 845, we must defer. That standard is easily met here.

The purposes of the PSD provisions of the Clean Air Act include:

- (3) to insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources . . . [and]
- (5) to assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of *all the consequences* of such a decision. . . .

Section 160 (emphasis added). Nothing in the legislative history undermines the inference that Congress believed that its PSD provisions should balance the values of clean air, on the one hand, and economic development and productivity, on the other, and much confirms it. *See, e.g.,* House Report at 163 * * * ; S.Rep. No. 127, 95th Cong., 1st Sess. 29 (1977) * * * . In *Alabama Power* we said, "[Section 302(j)] may be welcomed as serendipitous, for it gives EPA flexibility to provide industry-by-industry consideration and the appropriate tailoring of coverage." 636 F.2d at 369. The EPA construction of § 302(j) thus fits the statutory language, the overall congressional purposes, and our prior understanding of § 302(j)'s role.

EPA's approach seems especially appropriate for extractive industries. The idea of special rules for prevention of significant deterioration was born from a fear that polluters might avoid air quality regulations by relocating their plants to pristine areas where ambient pollution levels were well below statutory ceilings. *See* House Report 294 at 151 [citations omitted] ("there is a strong national interest in not encouraging industries to go forum shopping, seeking to locate new plants in areas which allow the greatest pollution"). The extractive industries pose such a fear only indirectly, as one may extract a mineral deposit only where one finds it. *Compare* 49 Fed. Reg. at 43,212/2. While air-related controls over surface coal mines will at the margin tend to increase underground mines' share of total coal production, thus in a sense shifting the locale of coal production, the impact of exclusion from PSD treatment is less direct than for more mobile industries.

Finally, EPA's decision not to list surface coal mines under § 302(j) hardly means that their operators are free to pollute at will. As EPA noted, they remain subject to other Clean Air Act limitations (e.g., national ambient air quality standards and, in areas in which the PSD baseline has been triggered, PSD increment limitations) and, more importantly, to the authority of the Department of Interior under the Surface Mining Control and Reclamation Act and other provisions, *see* 54 Fed. Reg. at 48,875/2, a matter discussed more fully below. The agency construction of § 302(j) is reasonable.

* * *

The petitioners urge that even if cost/benefit analysis is appropriate under § 302(j), EPA's application of its chosen methodology was flawed. EPA posited four basic alternatives:

Alternative I: The status quo; no listing.

Alternative II: Listing for surface coal mines, but with a proviso that emissions from existing mines would not count toward consumption of the permitted increments, i.e., a kind of grandfathering of existing mines.

Alternative III: Listing of surface coal mines, with no exclusion of emissions from existing mines.

Alternative IV: Listing of surface coal mines only to the extent that they have an impact on air quality in the most highly protected of the various classes into which regions are sorted for PSD purposes, Class I areas and "mandatory" Class II areas (which, unlike other Class II areas, states may not reclassify into Class III areas).

See 54 Fed. Reg. at 48,872-73. In its Regulatory Impact Analysis, EPA assessed the costs and benefits of the three regulatory alternatives against the baseline of no regulation. It concluded that the costs of Alternatives II and III greatly outweighed their benefits. *See* 54 Fed. Reg. at 48,873/2. On this score it pointed to the relatively low background ambient pollution levels in the remote areas where surface coal mines are generally located, the limited distance from the mine that ambient impacts occur, and the general absence of population centers exposed to surface coal mine particulate matter. Petitioners appear not to contest these conclusions.

The Regulatory Impact Analysis found the evaluation of Alternative IV inconclusive, estimating that it might have anywhere from a \$300,000 net advantage to a \$300,000 net detriment for the two sample areas considered. This did not include certain hard-to-value benefits that the extra regulation might afford. *Id.* EPA noted, however, that the study failed to consider the effects of Department of Interior regulation of surface coal mining, and concluded that Alternative IV was not cost justified, noting that regulation by Interior would achieve "many if not all of the visibility and other benefits" of inclusion. 54 Fed. Reg. at

48,873/3.

* * *

There are two branches to petitioners' attack on EPA's theory that regulation by the Department of Interior (under the Surface Mining Control and Reclamation Act and other authorities) made many of the benefits of listing coal mines redundant, leaving the net cost-benefit evaluation of Alternative IV negative. First, they note that EPA's Clean Air Act authority trumps Interior's as to general control of air quality hazards of mining, unless there is a " 'regulatory gap' in the coverage of [the Clean Air Act]". *National Wildlife Federation v. Hodel*, 839 F.2d 694, 765 (D.C. Cir. 1988); *see also* SMCRA § 702(a)(4), 30 U.S.C. § 1292(a)(4) (1988). As our conclusion in *Hodel* that no such regulatory gap existed rested on EPA's being in the process of considering listing surface coal mines, 839 F.2d at 765, and as it has now resolved that in the negative, the premise for any limit on Interior's jurisdiction no longer applies. Moreover, *Hodel's* finding of preemption was extremely limited, and did not encompass the Interior regulations on which EPA now relies. *Id.* EPA's action is simply a recognition that many of the benefits of listing can be achieved by Interior under SMCRA, not, as petitioners see it, a "deferral in favor of SMCRA contraven[ing] congressional intent."

Second, petitioners argue that Interior's authority to regulate fugitive emissions from surface coal mines is an imperfect substitute for PSD regulation by EPA. But EPA never claimed that Interior's SMCRA regulation was a clone of listing for PSD purposes. It merely found that Interior's programs would "provide benefits equivalent to Alternative IV through the mitigation or prevention of adverse effects on air quality related values in national parks and other areas of special concern, . . . assuming a roughly similar mix of pollution control measures, reductions in SCM size, and SCM relocations as was assumed would accompany Alternative IV." 54 Fed. Reg. at 48,879/3 (emphasis added). Thus, EPA reasoned, a significant portion of the benefits that the Regulatory Impact Analysis attributed to Alternative IV were phantom benefits. With them removed, the cost-benefit analysis of Alternative IV (which came out inconclusively balanced) would come out decidedly negative. *Id.* at 48,878/3.

That conclusion hardly seems arbitrary or capricious. By virtue of SMRCA, surface coal mining is forbidden in some areas, subject to Interior's veto in others, and everywhere subject to Interior regulation for air quality purposes, restrictions that EPA reviewed in considerable detail. 54 Fed. Reg. at 48,674/1-75/2.

Prohibition. Section 522(e)(1), 30 U.S.C. § 1272(e)(1) (1988), prohibits surface coal mining within the boundaries of mandatory Class I and Class II areas.³ Further, § 522(e)(3) prohibits, subject to valid existing rights, surface coal mining that will "adversely affect" these areas, unless the mining is approved jointly by Interior and the federal, state or local agency with jurisdiction over the park.

Veto authority. Section 522(c) allows any person whose interests may be adversely affected by surface coal mining to petition the regulatory authority to have any area designated as unsuitable for mining, and the grounds on which the petition may be granted include a showing that the operations will "affect fragile or historic lands in which such operations could result in significant damage to important historic, cultural, scientific, and aesthetic values and

³ Subject to valid rights existing on August 3, 1977, § 522(e)(1) prohibits mining in National Park Systems, the National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, and National Recreation Areas. This overlaps completely with PSD mandatory Class I areas and appears to cover all mandatory Class II areas except national lakeshores and seashores.

natural systems”, see § 522(a)(3)(B), 30 U.S.C. § 1272(a)(3)(B) (1988), which Interior interprets to include areas of recreational value due to high environmental quality, critical habitats for threatened species and uncommon geologic formations, 30 C.F.R. § 762.5 (1990).

Controls. SMCRA provides Interior authority to require mine operators to “stabilize and protect all surface areas . . . to effectively control erosion and attendant air and water pollution.” § 515(b)(4), 30 U.S.C. § 1265(b)(4) (1988); see also § 515(b)(17), 30 U.S.C. § 1265(b)(17) (1988). Under this authority, Interior has promulgated extensive regulations, requiring, for example, that all surface coal mining permit applications include a plan for fugitive dust control and an air quality monitoring program to evaluate its effectiveness. 30 C.F.R. § 780.15 (1990). In addition, haul roads must be located, designed, constructed, used, maintained, and reclaimed so as to “[c]ontrol or prevent erosion . . ., including road dust as well as dust occurring on other exposed surfaces, by measures such as vegetating, watering, using chemicals or other dust suppressants.” *Id.* § 816.150(b)(1).

Finally, EPA relied on the Bureau of Land Management’s authority over coal mining on federal lands (exercised primarily through lease requirements), noting that 80% of western coal reserves are located on federal lands. See 54 Fed. Reg. at 48,675/1. Areas of outstanding scenic quality are considered unsuitable for leasing unless the BLM determines that “mining operations will not significantly diminish or adversely affect the scenic quality of the designated area”. 43 C.F.R. § 3461.5(e)(2) (1990).

Thus we find that EPA was not arbitrary or capricious in its decision not to list surface coal mines on the basis of its projection of the effects of the prohibitions and regulations that Interior will enforce. EPA recognized, however, that its projection might prove incorrect, and committed itself to reconsider listing surface coal mines on evidence that Interior “will not protect visibility and other air quality values” in “national parks, wilderness areas, national memorial parks, and international parks that are Class I PSD areas.” 54 Fed. Reg. at 48,870/3. Presumably it will do so on such a showing by petitioners.

* * *

The petitions for review are *denied*.

NOTES

1. Section 702 of the Surface Mining Control and Reclamation Act provides that nothing in that law should be construed as “superseding, amending, modifying or repealing” various federal laws including the Clean Air Act. As the court notes in *NRDC*, the D.C. Circuit had previously construed this language to allow the Secretary of the Interior to fill in “regulatory gaps” in the coverage of another statute. *In re: Surface Mining Regulation Litigation*, 627 F.2d 1346, 1367 (D.C. Cir. 1980). In *National Wildlife Federation v. Hodel*, 839 F.2d 694, 765 (D.C. Cir. 1988), the court construed § 515(b)(4) of SMCRA, which requires all surface coal mining and reclamation operations to “stabilize and protect all surface areas including spoil piles affected by surface coal mining and reclamation operations to effectively control erosion and attendant air and water pollution.” 30 U.S.C. § 1265(b)(4). The Wildlife Federation argued that this provision required the control of fugitive dust from coal mines. The court found that since EPA was then in the process of deciding whether to control fugitive dust from coal mines, no regulatory gap existed for SMCRA to fill. Does the *NRDC* decision adequately reconcile its outcome with the decision in *National Wildlife Federation*? What

result would likely be obtained if the Wildlife Federation were to seek a new hearing on the scope of § 515(b)(4) of SMCRA, on the grounds that a regulatory gap now exists?

2. In an earlier case the court had rejected EPA's proposal to delay its decision as to whether to list coal mines as sources of fugitive emissions subject to regulation. *Sierra Club v. Gorsuch*, 715 F.2d 653 (D.C. Cir. 1983). EPA had asserted the need for delay because it lacked "quantification techniques for applying PSD regulations to individual mines." With respect to other sources of fugitive emissions, however, EPA had concluded that "quantification was necessary only to determine whether a *particular source* was subject to review, not to determine whether a *category* of sources should be regulated." Furthermore, EPA had decided that all sources meeting a 250 ton threshold requirement should be regulated but had ignored a report which found that most surface coal mines exceed that 250 ton threshold. EPA insisted that its distinction between coal mines and other sources was justified, but failed to explain its reasons. Judge Bazelon was not impressed:

If there is reasoned decisionmaking lurking behind such agency behavior it has yet to be articulated. For agency action to be upheld, it must not only be explainable; it must be explained. Without such explanation, we cannot properly exercise review.

Id. at 660-661. The court remanded EPA's decision so that it could either justify its decision not to regulate surface coal mines or decide that they should be regulated.

3. The PSD provision of the Act establishes standards only for SO₂ and particulates. Section 166(a) of the Act, however, requires EPA to study HC, CO, NO₂ and photochemical oxidants and to promulgate regulations by August 7, 1979 "to prevent the significant deterioration of air quality which would result from the emission of such pollutants." Criteria pollutants designated after the 1977 Amendments (lead is currently the only one) must be addressed in the same manner within two years from the date that NAAQS are promulgated for such pollutants. The Act sets out standards to which EPA must adhere in promulgating these rules, including the requirement that they contain specific numerical measures against which permit applications may be evaluated. *Id.* § 166(d). In 1980, EPA took initial steps to comply with § 166(a) by announcing its intention to promulgate PSD rules for lead, O₃, CO and NO₂. In 1981, however, EPA canceled the rulemaking proceedings without explanation. In *Sierra Club v. Thomas*, 658 F. Supp. 165 (N.D. Cal. 1987), EPA was ordered to promulgate final PSD rules for NO₂ by October, 1988. The court rejected EPA's claim that it would need a minimum of 50 months to complete such a rulemaking. EPA missed the court's deadline by approximately one year. Final rules were promulgated on October 17, 1989. 53 Fed. Reg. 40,656 (1989). Those rules set a Class I increment of 2.5 µg/m₃, a Class II increment of 25 µg/m₃, and a Class III increment of 50 µg/m₃. (The NAAQS for NO₂ is 100 µg/m³ annual arithmetic mean concentration.) In *Environmental Defense Fund v. EPA*, 898 F.2d 183 (D.C. Cir. 1990), those rules were remanded to the EPA to take new evidence and consider whether modifications might be appropriate. As of late-1997, no substantive changes to those rules had been made.

Visibility Protection

STATE OF VERMONT V. THOMAS

850 F.2d 99 (2d Cir. 1988)

ALTIMARI, Circuit Judge:

Petitioners, the State of Vermont, Conservation Law Foundation of New England, Inc., and Vermont Natural Resources Council, seek review, pursuant to §307(b)(1), of a final ruling of respondent, the Environmental Protection Agency ("EPA"), taking "no action" on those portions of Vermont's state implementation plan ("state implementation plan" or "SIP") addressing "regional haze" submitted under section 169A of the Clean Air Act of 1970, as amended (the "Clean Air Act" or the "Act"). Because we agree with respondent Lee Thomas, Administrator of the EPA (the "Administrator"), that current regulations do not encompass federally enforceable measures to alleviate "regional haze," we deny the petition for review.

BACKGROUND

Congress enacted the Clean Air Act to address the increasingly grave threat of air pollution to the environment, public health and the general welfare of the nation. § 101. The Act directs EPA to prescribe national "ambient air quality standards" and requires states to ensure that the national standards are complied with by adopting implementation plans. *Id.* §§ 109-110. The statutory scheme establishes shared state and federal responsibility for achieving a cleaner and safer environment by providing for federal coordination of regional air pollution control measures implemented by the states. *Id.* § 101(a)(3), (4). To ensure that the various state implementation plans meet the requirements of the Act and EPA regulations, EPA is empowered to approve or disapprove SIPs and any subsequent revisions thereto. *Id.* § 110.

At issue in this case are the 1977 amendments to the Act which directed EPA, in pertinent part, to adopt regulations protecting visibility in certain national parklands and wilderness areas, designated as "Class I Federal areas." Clean Air Act § 169A.; *see id.* § 162(a) (defining Class I areas to include international parks, national wilderness areas exceeding 5,000 acres, national memorial parks exceeding 5,000 acres, and national parks exceeding 6,000 acres). Class I areas were singled out by Congress as requiring special protection in view of the aesthetic importance of visibility to the continued enjoyment and preservation of the country's scenic vistas. Accordingly, Congress set as a "national goal the prevention of any future, and the remedying of any existing, impairment of visibility . . . result[ing] from man-made air pollution" in Class I areas, *id.* § 169A(a)(1), and directed EPA to provide guidelines for the states in order "to assure . . . reasonable progress toward meeting the national goal" of visibility enhancement in those areas. *Id.* § 169A(a)(4), (b).

Pursuant to its authority under section 169A of the Act, EPA promulgated regulations in 1980 designed to "establish long-range goals, a planning process, and implementation procedures" toward achieving the national visibility goal. 45 Fed. Reg. 80,084 (codified at 40 C.F.R. § 51.300 et seq.). Specifically, EPA determined that visibility impairment is of two types: 1) "plume blight," i.e., traceable streams of smoke, dust or colored gas emanating from single sources or small groups of sources; and 2) "regional haze," i.e., widespread, homogeneous haze from a multitude of sources which impairs visibility in large areas, often

for hundreds of miles from the sources of the pollution. Of the two types of air pollution, EPA recognized that plume blight obviously was more susceptible to identification, measurement and thus control. The more vexing problem of how to alleviate regional haze was, in EPA's view, subject to certain scientific and technical limitations. Consequently, the 1980 regulations adopted a "phased approach to visibility protection." *Id.* at 80,085. Under "Phase I" of the program, EPA regulations targeted plume blight while deferring for "future phases" the complexities of regional haze and urban plumes. *Id.* at 80,085-86. "Phase II" would address regional haze once monitoring and other scientific techniques progressed to a point that EPA could develop a regulatory program for that type of impairment. *Id.* at 80,087.

The effect of the 1980 regulations was to require the 36 states containing Class I areas to revise their SIPs to implement a visibility protection program, consistent with the new regulations, to assure reasonable progress toward section 169A's national visibility goal. The regulations mandated that each of the affected states' SIPs contain, *inter alia*, a "long-term (10-15 years) strategy" to combat visibility impairment in each Class I area. 40 C.F.R. § 51.306(a) (1987).

In April 1986, Vermont submitted to EPA its proposed plan addressing visibility impairment at the Lye Brook National Wilderness Area, a 12,000 acre mountain plateau in the southern portion of the Green Mountain National Forest and the state's only Class I area. As indicated in Vermont's 300-page SIP, the Lye Brook area is afflicted with summertime haze that has drastically reduced visibility by as much as 40 percent since the mid 1950s. The Vermont plan contained extensive technical analysis demonstrating that Lye Brook's visibility impairment is due primarily to sulfur dioxide pollution originating from out-of-state sources, e.g., power plants and coal and oil company factories. Vermont found that sulfate particle emissions from a multitude of sources located in 8 upwind states—Ohio, Pennsylvania, West Virginia, Kentucky, Tennessee, Illinois, Indiana, and Michigan—were principally responsible for the haze blanketing Lye Brook during the summer months.

Vermont's SIP concluded that while adequate in-state measures to prevent plume blight were already in place, a reduction program aimed at out-of-state sulfate emissions would be necessary to assure reasonable progress toward the national visibility goal. Consequently, Vermont proposed a federally enforceable "long-term strategy" to combat the effects of regional haze at Lye Brook. The long-term strategy included a summertime ambient sulfate standard and a 48-state emissions reduction plan in order to meet the air quality standard by 1995. In addition, Vermont asked EPA to disapprove and revise the SIPs of the eight upwind states which were the major contributors to visibility impairment at Lye Brook, *see* Clean Air Act § 110(c)(1)(B) ("[t]he Administrator shall . . . set[] forth an implementation plan . . . for a State if . . . the plan . . . submitted for such State is determined by the Administrator not to be in accordance with the requirements of this section"), and also asked that four of these states not containing Class I areas (Ohio, Illinois, Indiana, and Pennsylvania) be added to the list of 36 states required to submit visibility plans.

In December 1986, EPA issued a proposed ruling on Vermont's SIP. 51 Fed. Reg. 43,389. EPA agreed with Vermont's assessment that visibility impairment at Lye Brook is due predominantly to regional haze caused by out-of-state sulfur dioxide emissions. *Id.* at 43,391. Nevertheless, EPA proposed taking "no action" on those portions of Vermont's SIP addressing regional haze "because EPA has yet to establish requirements for strategies relating to regional haze." *Id.* at 43,392. EPA objected to Vermont's program as dictating a single solution to a national problem without the benefit of EPA regulations implementing a Phase II regional haze program.

In July 1987, EPA issued its final ruling on Vermont's proposal. 52 Fed. Reg. 26,973. While EPA approved limited portions of Vermont's SIP complying with existing plume blight regulations under section 169A of the Act, EPA decided to take "no action" on those parts of the SIP aimed at controlling regional haze. EPA also denied Vermont's request to disapprove the SIPs of the eight upwind states as well as its request to add four states to the list of states required to submit visibility protection plans for Class I areas. In explaining its "no action" ruling, EPA concluded that Vermont's proposal establishing an ambient sulfate standard and its long-term strategy for emissions reduction throughout the continental United States were outside the scope of EPA's existing regulations. EPA viewed as federally enforceable only those portions of a state implementation plan submitted in response to regulations promulgated by the agency. According to EPA, Vermont's regional haze measures could not become federal rules "until such time as EPA decides to promulgate a national regional haze program." *Id.* at 26,974.

Petitioners thereupon filed a petition for review of EPA's "final rule" pursuant to § 307(b)(1). We permitted the Alabama Power Company, et al. to intervene as respondents.

DISCUSSION

Petitioners argue that EPA's refusal to approve Vermont's SIP in its entirety violates both EPA's own regulations and the Clean Air Act, and accordingly seek reversal of EPA's ruling as an administrative action "not in accordance with law." § 307(d)(9)(A); 5 U.S.C. § 706(2)(A); *see Connecticut v. EPA*, 696 F.2d 147, 155 (2d Cir. 1982); *Friends of the Earth v. EPA*, 499 F.2d 1118, 1123 (2d Cir. 1974). Specifically, petitioners contend that the 1980 regulations encompass measures to alleviate regional haze and that EPA's contrary interpretation of its regulations is inconsistent with the terms and the underlying purposes of the Clean Air Act. For the reasons that follow, we disagree.

* * *

Our inquiry into determining whether the Administrator's action in this case was "in accordance with law" is a limited one. *See Kennecott Corp. v. EPA*, 684 F.2d 1007, 1013 (D.C. Cir. 1982). "Although this inquiry . . . is to be searching and careful, . . . [a] court is not empowered to substitute its judgment for that of the agency." *Friends of the Earth*, 499 F.2d at 1123 (*quoting Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402, 416 (1971)). Indeed, in view of the EPA's responsibility to administer the Clean Air Act, we must give great deference to the Administrator's interpretation of the statute. *EPA v. National Crushed Stone Ass'n*, 449 U.S. 64, 83 (1980); *Udall v. Tallman*, 380 U.S. 1, 16 (1965). And, when the Administrator's interpretation of his own regulations is at issue, "deference is even more clearly in order." *Udall*, 380 U.S. at 16. Consequently, unless petitioners can demonstrate that EPA's action was plainly unreasonable, we cannot disturb its ruling. *See Connecticut v. EPA*, 696 F.2d at 155.

We begin with the statute itself. Section 169A of the Clean Air Act directs EPA to promulgate regulations requiring states containing Class I areas to adopt through their SIPs long-term strategies assuring reasonable progress toward meeting the national visibility goal. § 169A(b). Pursuant to this legislative mandate, in 1980 EPA issued regulations providing that each SIP include a long-term strategy designed to remedy any existing, and prevent any future, impairment of visibility in Class I areas. 40 C.F.R. § 51.306(a) (1987).

Vermont claims that its long-term strategy addressing regional haze fits within the purview of the 1980 regulations and must be approved by EPA. *See Clean Air Act* §

110(a)(2)(J) (“Administrator shall approve [the SIP] . . . if he determines that . . . it meets the requirements” of, *inter alia*, section 169A). The Administrator responds by arguing that the 1980 regulations do not cover regional haze impairment and that measures addressing that type of impairment are not required by section 169A and therefore cannot be part of a federally enforceable SIP. *See id.* § 110(d) (federally enforceable SIP is one which “implements the requirements” of the statute) (emphasis added).

In support of its interpretation of the 1980 regulations, EPA cites the preamble to the final regulations in which EPA explained its adoption of a “phased approach” to visibility protection in Class I areas. The preamble indicates that “Phase I” of the program “[r]equire[s] control of impairment that can be traced to a single existing stationary facility or small group of . . . facilities” while “[f]uture phases will . . . address[] more complex problems such as regional haze and urban plumes.” 45 Fed. Reg. 80,085-86. Although petitioners concede that action on regional haze was deferred for future phases of the visibility program, they nonetheless argue that the 1980 regulations were intended to allow, as technologies improved, for the evolution of long-term strategies combating regional haze. We disagree.

It is one thing to recognize that the regulatory mechanism put into place by the 1980 regulations anticipated long-term strategies designed to alleviate regional haze, *see* 45 Fed. Reg. 34,764 (“[e]ven though we are calling these . . . regulations ‘Phase I of the visibility protection program,’ the basic structure . . . will remain constant for all phases”); it is quite another to suggest that the 1980 regulations actually authorized states containing Class I areas to implement regional haze measures through federally enforceable SIPs. Petitioners would have us ignore the preamble language in favor of the “plain meaning” of the regulations. *But see New York State Comm’n on Cable Tel. v. FCC*, 571 F.2d 95, 98 (2d Cir. 1978), *cert. denied*, 439 U.S. 820 (1978) (“[m]ere incantation of the plain meaning rule, without placing the language to be construed in its proper framework, cannot substitute for a meaningful analysis”). Respondents correctly note, however, that no “plain meaning” to regulate regional haze can be discerned from the face of the regulations. Consequently, having looked to the preamble to determine the scope of the 1980 regulations, *see Wiggins Bros., Inc. v. Dep’t of Energy*, 667 F.2d 77, 88 (Temp. Emer. Ct. App. 1981), *cert. denied*, 456 U.S. 905 (1982) (“preamble to a regulation . . . should be considered in construing . . . and determining the meaning of the regulation”), we find that EPA intended to limit the regulations to plume blight.

Petitioners also contend that even in the absence of EPA regulatory “guidelines” addressing regional haze, § 169A(b)(1), the Act imposes upon states an independent duty to develop visibility protection standards to assure “reasonable progress” toward achieving the national visibility goal. While it is certainly true that the actual implementation of visibility protection measures is the responsibility of the states, the statute and its legislative history make clear that Congress charged EPA with the responsibility through its rulemaking power to ensure attainment of the national goal. *Id.* § 169A(a)(4); H.R. Rep. No. 294, 95th Cong., 1st Sess. 206, reprinted in 1977 U.S. Code Cong. & Admin. News 1077, 1285. Without EPA rulemaking on regional haze, therefore, Vermont’s proposed interstate measures are outside the scope of the regulations and thus are not subject to federal enforcement under the Act.

Since Vermont’s regional haze measures were not required to be included in its SIP, we believe that EPA’s “no action” response was appropriate. Petitioners maintain, however, that EPA’s “no action” ruling deprives Vermont of a definitive decision on the merits of its proposal and violates section 110 of the Act. *See* § 110(a)(2) (Administrator “shall . . . approve or disapprove” proposed SIP). We have held previously that the Clean Air Act should

not be read to permit only outright approval or disapproval of state plans so long as EPA's action was reasonable. *Connecticut Fund for the Environment, Inc. v. EPA*, 672 F.2d 998, 1006-07 (2d Cir.), *cert. denied*, 459 U.S. 1035 (1982). In this case, the effect of EPA's ruling was to "keep [Vermont's] measures out of the Federally enforceable SIP." 52 Fed. Reg. 26,976 (1987). EPA explained its action in this regard as an attempt to "avoid the appearance of a premature judgment as to [the measures'] ultimate approvability, and [to] prevent confusion regarding their present enforceability as a matter of state law." *Id.* Given that Vermont was free to adopt within its borders air quality standards more stringent than federal law requires, § 116, it is evident that EPA's "no action" ruling—as opposed to outright rejection of Vermont's regional haze measures—was more than reasonable.

We recognize, of course, that without federal enforcement of Vermont's plan, little, if any, progress will be made on regional haze at Lye Brook. While this is indeed lamentable, until such time as a federal regional haze program is in place, Vermont may not impose its standards on upwind states. *See Air Pollution Control Dist. v. EPA*, 739 F.2d 1071, 1087-88 (6th Cir. 1984) (downwind state's air quality standards that are more stringent than national standards do not require upwind state to alter its otherwise valid SIP); *Connecticut v. EPA*, 656 F.2d 902, 909 (2d Cir. 1981) (same); *see also* § 110(a)(2)(E)(i). Consequently, we find that EPA's denial of Vermont's request to disapprove the SIPs of the eight upwind states contributing to visibility impairment at Lye Brook was in accordance with federal law, *see* § 110(c)(1)(B) (providing that EPA may revise SIP if it is not in compliance with requirements of the Act), and likewise that EPA's refusal to add four regional haze producing states to those now required to develop Class I visibility protection programs was reasonable in view of the limited scope of the 1980 regulations.

Finally, we note that, more than ten years after the enactment of section 169A, there still is no national program addressing regional haze. We are sympathetic to petitioners' argument that something must be done soon. EPA's assurances of future action on regional haze are little comfort to Vermont and visitors to Lye Brook. We can only hope that EPA will act quickly in furtherance of the national visibility goal. In the meantime, Vermont can pursue an alternative remedy, namely, the filing with EPA of a petition for rulemaking under the Administrative Procedure Act, 5 U.S.C. § 553(e), with eventual judicial review in the D.C. Circuit. In any event, we are convinced that the issues raised by the petition in the instant case are best left to the national rulemaking process rather than to an SIP approval proceeding.

CONCLUSION

For all of the foregoing reasons, the petition for review is denied.

NOTES

1. The court suggests that Vermont can petition the EPA for a rulemaking to address the regional haze problem. How likely is it that such a petition would be successful? Can Vermont avail itself of any other remedy? *See* §§ 110(a)(2)(D)(i)(II); 126(b).

2. Following the designation of federal Class I areas for visibility protection (*see* 40 C.F.R. § 81.400 *et seq.* (1995)), the states are required to alter their SIPs as necessary to make reasonable progress toward the national goal of protecting these areas from visibility impairment. § 169A(b)(2). To help achieve this goal, the Act requires major stationary

sources, which began operating before August 7, 1977 and after August 7, 1962, and which may reasonably be anticipated to cause or contribute to any impairment of visibility in a Class I area designated for visibility protection, to install, as expeditiously as practicable, the best available retrofit technology (BART). § 169A(b)(2)(A). BART is to be determined by the state, taking into account costs of compliance, the remaining useful life of the source, and other factors. §§ 169A(b)(2)(A); 169A(g)(2). For fossil fuel-fired power plants, with a capacity in excess of 750 megawatts, BART standards must be established by the state according to EPA guidelines. Should BART apply to new facilities? Why or why not?

3. To help prevent visibility degradation, the EPA has adopted rules to protect “integral vistas”. An integral vista is “a view from within the mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area.” 40 C.F.R. § 51.301(n) (1996). States are required to list in their SIPs integral vistas that have been identified by the responsible federal land managers. 40 C.F.R. § 51.304(c).

4. Section 169A(a)(1) establishes a goal of protecting visibility values “in mandatory Class I federal areas. . . .” (emphasis added). Are the integral vista rules consistent with this requirement?

5. In a separate lawsuit filed by the State of Vermont as well as several other states and conservation groups, the Court of Appeals for the First Circuit denied the plaintiffs’ request for an order requiring the EPA to promulgate regulations to protect the visibility in mandatory, Class I national parks and wilderness areas. *State of Maine v. Thomas*, 874 F.2d 883 (1st Cir. 1989). Like the Second Circuit in the *Vermont* case, the First Circuit suggested that plaintiffs seek relief through a petition for rulemaking. *Id.* at 890. As suggested by the proposed rules set forth below, efforts to persuade the EPA to address regional haze problems appear finally to be bearing fruit.

PROPOSED REGIONAL HAZE REGULATIONS

62 Fed. Reg. 41,138 (1997) (to be codified at 40 C.F.R. Part 51)

* * *

SUMMARY: On July 18, 1997 EPA published revisions to the national ambient air quality standards (NAAQS) for ozone and particulate matter (PM). In the final action revising the PM NAAQS, EPA recognized that visibility impairment is an important effect of PM on public welfare and concluded that the most appropriate approach for addressing visibility impairment is to establish secondary standards for PM identical to the suite of primary standards in conjunction with a revised visibility protection program to address regional haze in mandatory Class I Federal areas (certain large national parks and wilderness areas). Section 169A of the Clean Air Act (Act) sets forth a national goal for visibility which is the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.” This section calls for regulations to assure reasonable progress toward meeting the national goal.

Today’s proposal sets forth a program to address regional haze visibility impairment in the nation’s most treasured national parks and wilderness areas. Because much of the pollution affecting haze in these generally rural areas is transported long distances, measures to protect these areas should also reduce air pollution and improve visibility outside of these areas as

well.

SUPPLEMENTARY INFORMATION: * * *

Overview information—World Wide Web (WWW) sites have been developed for overview information on visibility issues, the NAAQS, and discussions of implementation issues by the Clean Air Act Advisory Committee, Subcommittee on Ozone, Particulate Matter, and Regional Haze Implementation Programs. These web sites can be accessed from Uniform Resource Locator (URL): [http:// www.epa.gov/airlinks/](http://www.epa.gov/airlinks/).

* * *

I. REGIONAL HAZE PROGRAM

A. Introduction

The visibility protection program under sections 110(a)(2)(J), 169A, and 169B of the Act is designed to protect mandatory Federal Class I areas¹ from impairment due to manmade air pollution. Congress adopted the visibility provisions in the Clean Air Act to protect visibility in these “areas of great scenic importance.” The current regulatory program addresses visibility impairment in these areas that is “reasonably attributable”³ to a specific source or small group of sources. In adopting section 169A, the core visibility provisions adopted in the 1977 Clean Air Act Amendments, Congress also expressed its concern with “hazes” and the potential corresponding need to control a “variety of sources” and “regionally distributed sources.” The purpose of today’s proposal to revise the existing visibility regulations at 40 CFR 51.300-51.307 is to integrate certain fundamental provisions addressing regional haze impairment. The resulting regulation will reflect a comprehensive visibility protection program for mandatory Class I Federal areas.

Regional haze is produced by a multitude of sources located across a broad geographic area emitting fine particles and their precursors. Twenty years ago, when initially adopting the visibility protection provisions of the Act, Congress specifically recognized that the “visibility problem is caused primarily by emission into the atmosphere of sulfur dioxide, oxides of nitrogen, and particulate matter, especially fine particulate matter, from inadequate[ly] controlled sources.” The fine particulate matter (PM)(e.g., sulfates, nitrates, organic and elemental carbon, and soil dust) that impair visibility by scattering and absorbing light are among the same particles related to serious health effects and mortality in humans, as well as to environmental effects such as acid deposition. The role of regional transport of fine particles in contributing to elevated PM levels and regional haze impairment has been well documented by many researchers and recognized as a significant issue by many policy makers. Data from the existing visibility monitoring network show that visibility impairment caused

¹ Areas designated as mandatory Class I Federal areas are those national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks which were in existence on August 7, 1977. Visibility has been identified as an important value in 156 of these areas. See 40 CFR Part 81, Subpart D. The extent of a mandatory Class I Federal area includes subsequent changes in boundaries, such as park expansions. CAA section 162(a).

³ “Reasonably attributable” visibility impairment, as defined in 40 CFR 51.301(s), means “attributable by visual observation or any other technique the State deems appropriate.” It includes impacts to mandatory Federal Class I areas caused by plumes or layered hazes from a single source or small group of sources.

by air pollution occurs virtually all the time at most national park and wilderness area monitoring stations. Average visual range in most of the Western U.S. is 100-150 kilometers (km), or about one-half to two-thirds of the visual range that would exist without manmade air pollution. In most of the East, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under natural conditions.

B. Background

Section 169A of the Act, established in the 1977 Amendments, sets forth a national visibility goal that calls for “the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution.” The EPA’s existing visibility regulations, [40 C.F.R. §§ 51.300-307] developed in 1980, address visibility impairment that is “reasonably attributable” to a single source or small group of sources. Under these rules, the 35 States and 1 territory (Virgin Islands) containing mandatory Class I Federal areas are required to: (1) revise their SIPs to assure reasonable progress toward the national visibility goal; (2) determine which existing stationary facilities should install the Best Available Retrofit Technology (BART) for controlling pollutants which impair visibility; (3) develop, adopt, implement, and evaluate long-term strategies for making reasonable progress toward remedying existing and preventing future impairment in the mandatory Class I Federal areas; (4) adopt certain measures to assess potential visibility impacts due to new or modified major stationary sources, including measures to notify FLMs of proposed new source permit applications, and to consider visibility analyses conducted by FLMs in their new source permitting decisions; and (5) conduct visibility monitoring in mandatory Class I Federal areas.

The 1980 rules were designed to be the first phase in EPA’s overall program to protect visibility. The EPA explicitly deferred action addressing regional haze impairment until some future date “when improvement in monitoring techniques provides more data on source-specific levels of visibility impairment, regional scale models become refined, and our scientific knowledge about the relationships between emitted air pollutants and visibility impairment improves.”

While EPA is addressing visibility protection in phases, the visibility protection provisions of the Act are broad. The national visibility goal in section 169A calls for addressing visibility impairment generally, including regional haze. Further, Congress added section 169B as part of the 1990 Amendments to the Act to focus attention on regional haze issues. This section includes provisions for EPA to conduct visibility research on regional regulatory tools with the National Park Service and other federal agencies, to develop an interim findings report on the visibility research, and to provide periodic reports to Congress on visibility improvements due to implementation of other air pollution protection programs. Section 169B allows the Administrator to establish visibility transport commissions. Section 169B(f) called for EPA to establish a visibility transport commission for the region affecting visibility of the Grand Canyon National Park, the purpose of which was to assess scientific and technical information pertaining to adverse impacts on visibility from existing and projected growth in emissions, and to issue a report to EPA recommending measures to remedy such impacts. The statute specifically called for the report to address long-term strategies for addressing regional haze. [§ 169B(e)(1).] In 1991, EPA established the Grand Canyon Visibility Transport Commission (GCVTC) and its final report was completed in June 1996. Section 169B(e) calls for the Administrator, within 18 months of receipt of the GCVTC report, to carry out her “regulatory responsibilities under section [169A], including criteria for measuring ‘reasonable progress’ toward the national goal.” Today’s proposal is the first step

toward fulfilling EPA's responsibility, defined since 1980, to put in place a national regulatory program that addresses both reasonably attributable and regional haze visibility impairment.

Today's proposal also implements the Administrator's decision to address the general national public welfare concern for visibility through a combined program of setting a new PM_{2.5} secondary national ambient air quality standard equivalent to the primary standard, promulgated in a recent Federal Register rule published on July 18, 1997 (62 Fed. Reg. 38,652), and a revised visibility protection program to address regional haze impairment in mandatory Class I Federal areas.

The regional haze program is being proposed in a manner that can facilitate integration to the extent possible with the implementation programs for new NAAQS for ozone and particulate matter (PM) given the sources, precursor pollutants, and geographic areas of concern that these air quality programs have in common. The regional haze program recognizes the value of multistate coordination for regional haze program planning and implementation because of the key role of regional pollutant transport in contributing to haze at mandatory Class I Federal areas, most of which are in remote locations. At a minimum, voluntary regional planning activities, such as establishing common protocols and approaches for emission inventory development, emissions tracking, progress assessments, and regional model development, can benefit those States that will need to participate in future development of emission management strategies for PM standards as well. EPA plans to address this multistate coordination process in future guidance. An example of voluntary coordination among States to address visibility issues is the effort under way by western States and Tribes to form the Western Regional Air Partnership.

C. Key Organizations Addressing Regional Haze Issues

In developing these proposed revisions, EPA has taken into account a significant body of knowledge, developed by a wide range of stakeholders, on regional haze technical and policy issues. Three important bodies in particular have recently addressed regional haze issues: the National Academy of Sciences Committee on Haze in National Parks and Wilderness Areas, the Clean Air Act Advisory Committee (Subcommittee on Ozone, Particulate Matter, and Regional Haze Implementation Programs), and the Grand Canyon Visibility Transport Commission (GCVTC). An overview of these groups follows.

1. National Academy of Sciences

The 1993 report by the National Academy of Sciences, *Protecting Visibility in National Parks and Wilderness Areas*, contributed significantly to the state of the science regarding regional haze visibility impairment. The National Academy of Sciences formed a Committee on Haze in National Parks and Wilderness Areas in 1990 to address a number of regional haze-related issues, including methods for determining anthropogenic source contributions to haze and methods for considering alternative source control measures. The Committee issued several important conclusions in the report, including: (1) current scientific knowledge is adequate and control technologies are available for taking regulatory action to address regional haze; (2) progress toward the national goal will require regional programs that operate over large geographic areas and limit emissions of pollutants that can cause regional haze; (3) a program to address regional haze visibility impairment that focuses solely on determining the contributions of individual emission sources to such visibility impairment is likely to fail, and strategies instead should be adopted to consider the effect of many sources simultaneously on a regional basis; (4) visibility impairment can be attributed to emission sources on a regional scale through the use of several kinds of models; (5) visibility and control policies might need to be different in the West than the East; (6) efforts to improve visibility within Class I areas

will benefit visibility outside these areas, and could help alleviate other types of air quality problems as well; (7) achieving the national visibility goal will require a substantial, long-term program; and (8) continued progress toward this goal will require a greater commitment toward atmospheric research, monitoring, and emissions control research and development. The EPA has taken these conclusions and recommendations into account in developing today's action

2. Clean Air Act Advisory Committee and Its Subcommittee on Ozone, Particulate Matter, and Regional Haze Implementation Programs

The Subcommittee on Ozone, PM and Regional Haze Implementation Programs, established in September 1995, has also provided important input on regional haze and NAAQS implementation issues. The Subcommittee discussed a range of policy and technical issues related to implementation programs for attaining new and revised NAAQS and reducing regional haze in Class I areas. The Subcommittee includes representatives of several important stakeholder groups, including State, Tribal, and local governments, industry and small business, environmental groups, academia, and others. Between September 1995 and July 1997, the Subcommittee has held 10 meetings in various locations across the U.S. Work groups reporting to the Subcommittee have developed (and continue to develop) recommendations on a number of air quality management issues. One paper specifically addressed regional haze issues. Several other issue papers have been developed on planning and implementation issues related to all three programs. The Subcommittee has issued a report to the full Committee summarizing the Subcommittee's discussions through November 1996.

In discussing the various issue papers to date, the Subcommittee has provided important input to EPA on potential implementation options and approaches for the three air quality programs under consideration. The Subcommittee has recognized the significant role of transport of pollutants contributing to ozone, PM, and regional haze throughout the country. The Subcommittee has also recognized that in order to properly address air quality problems resulting from transported emissions, it is important to identify the broader geographic area contributing emissions to a particular area of concern (such as an area violating the NAAQS, or a mandatory Federal Class I area identified for visibility protection). For air quality problems that do not result predominantly from local emissions sources, the Subcommittee has generally supported the concept of initiating, as appropriate, multistate planning processes for conducting technical assessments (emission inventories, modeling, source attribution) and developing regional emission reduction strategy alternatives. A framework for regional planning efforts is addressed in the Subcommittee's "Institutional Mechanisms" paper, which is still under development to date. The procedures and functions of regional planning efforts such as the Ozone Transport Assessment Group and the Grand Canyon Visibility Transport Commission can serve as models for future voluntary regional planning efforts. The Subcommittee has also recognized the need for expanded monitoring networks, particularly chemical analysis of PM_{2.5} for implementation of both PM NAAQS and regional haze programs. The Subcommittee has discussed key program elements related to regional haze, including the definition of "reasonable progress," criteria for measuring progress, and control strategies for achieving such progress. The discussions covered issues related to how regional institutions should be involved in determining reasonable progress objectives and the need for a regional haze program to include a federal "backstop" for such objectives, as well as specific timeframes for setting objectives and periodically assessing progress.

3. Grand Canyon Visibility Transport Commission (GCVTC)

As noted, the GCVTC issued a report in June 1996 containing recommendations for

visibility protection. Today's rulemaking addresses the Commission's recommendations to EPA.

The EPA established the GCVTC on November 13, 1991 (56 Fed. Reg. 57,522, Nov. 12, 1991). Based on EPA's "broad discretionary authority under section 169B(c) * * * to establish visibility transport regions and commissions," it expanded the scope of the GCVTC, to include additional Class I areas in the vicinity of the Grand Canyon National Park—what is sometimes referred to as the "Golden Circle" of parks and wilderness areas. This includes most of the national parks and national wilderness areas of the Colorado Plateau. [See 56 Fed. Reg. 57,523.]

The GCVTC was charged with assessing information about visibility impacts in the region and making policy recommendations to EPA to address such impacts. The Act called for the Commission to assess studies conducted under section 169B as well as other available information "pertaining to adverse impacts on visibility from potential or projected growth in emissions for sources located in the * * * Region," and to issue a report to EPA recommending what measures, if any, should be taken to protect visibility. [§ 169B(d)] The Act specifically provided for the Commission's report to address the following measures: (1) The establishment of clean air corridors,¹⁹ in which additional restrictions on increases in emissions may be appropriate to protect visibility in affected Class I areas; (2) the imposition of additional new source review requirements in clean air corridors; and (3) the promulgation of regulations addressing regional haze.

In June 1996, the GCVTC issued its recommendations to EPA. The Act calls for EPA, taking into account the recommendations and other relevant information, to "carry out [its] regulatory responsibilities under section [169A], including criteria for measuring 'reasonable progress' toward the national goal" within eighteen months of receiving the recommendations. [§ 169B(e)(2).] Regulations issued under section 169A must provide guidelines to the States on appropriate techniques and methods for characterizing, modeling and controlling visibility impairment, and must require applicable SIPs to contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal. [§ 169A(b).] The EPA regulations issued after considering the Commission report must require affected states to revise their SIPs within 12 months.

The GCVTC recommendations covered a wide range of control strategy approaches, planning and tracking activities, and technical findings which address protection of visibility in the Class I areas of the Golden Circle. The primary recommendations of the GCVTC include: (1) Air pollution prevention and reduction of per capita pollution is a high priority; (2) Emissions growth should be tracked for its effect on clean air corridors; (3) Stationary source emissions should be closely monitored and regional targets should be established for sulfur dioxide emissions in 2000, with triggers for regulatory programs if targets are not met; (4) Focus should be given to emissions reductions in and near class I areas; (5) Mobile source emissions should be capped and national measures aimed at further reducing tailpipe emissions are supported; (6) Further assessment of the contribution of road dust to visibility impairment and its potential future impacts should be given high priority; (7) Further study is needed on emissions from Mexico; (8) Fire emissions are recognized as significantly impacting visibility, and programs should be implemented to minimize effects on visibility; and (9) A future

¹⁹ A clean air corridor is defined as a region that generally brings clear air to a receptor region, such as the Class I areas of the Golden Circle.

regional coordinating entity is needed to follow through on the Commission's recommendations. The Commission also adopted an approach to "reasonable progress" that, consistent with the national visibility goal, is based on remedying existing impairment and preventing future impairment.

The EPA has taken the Commission's recommendations, as well as the body of technical information developed by Commission, into account in developing the regional haze rules set forth in this proposal. The Commission's recommendations have components that contemplate implementation through a combination of actions by EPA, other Federal agencies, States and Tribes in the region, and voluntary measures on the part of public and private entities throughout the region. The Commission's recommendations also distinguish between recommended actions and policy or strategy options for consideration. The EPA has considered these factors in addressing the recommendations, discussed below.

a. Reasonable Progress. The EPA's proposed approach to "reasonable progress" is consistent with the Commission's approach. The Commission's report provides that "[t]he overall goal of the Commission's recommendations is to improve visibility on the worst days and to preserve existing visibility on the best days, at Class I areas on the Colorado Plateau." Thus, the Commission highlights the importance of not only remedying existing impairment but preserving and protecting good visibility. The Commission's report further provides that "[r]easonable progress towards the national visibility goal is achieving continuous emission reductions necessary to reduce existing impairment and attain steady improvement of visibility in mandatory Class I areas and managing emissions growth so as to prevent perceptible degradation of clean air days."

The EPA's proposed criteria for measuring reasonable progress, the proposed reasonable progress target, has been informed by the Commission's report in several respects. EPA proposes both to improve visibility on the most impaired days and to prevent visibility degradation on the least impaired days. Similar to the Commission's provision for "steady improvement of visibility," EPA proposes a quantitative visibility target and proposes to require that progress toward the target be demonstrated and evaluated on an on-going periodic basis. Finally, EPA proposes to provide that State plans consider emissions reductions in evaluating whether the quantitative reasonable progress target has been achieved.

b. Clean Air Corridors. The Commission concluded that a clean air corridor does exist for the Golden Circle region and that clean air corridors are key sources of clear air at Class I areas. At the same time, the GCVTC found that future growth in this area is not expected to perceptibly impact visibility in the Class I areas modeled, and that additional new source review requirements would not be needed in this area. The GCVTC recommended careful tracking of emissions growth in these areas but did not recommend additional control measures beyond those required under current laws.

The EPA generally agrees that no special requirements need to be proposed for clean air corridors. Nevertheless, these corridors contain a significant number of mandatory Federal Class I areas, and the regional emissions control strategies necessary to ensure reasonable progress toward the national visibility goal will need to address sources of pollution in these areas.

c. Stationary Sources. The Commission found that continuing implementation of existing Clean Air Act requirements such as efforts to address visibility impairment under the current rules would, in the short-term, result in significant sulfur dioxide (SO₂) emissions reductions in the region and corresponding improvements in visibility. The Report specifically encourages States and Tribes to review the visibility impacts at Class I areas on the Colorado

Plateau from uncontrolled pollution sources and to make expeditious determinations regarding the need for additional control. The Commission also provides for the establishment and tracking of progress toward an initial stationary source SO₂ emissions target to be achieved by the year 2000. A long-term target for the year 2040 and provisions for interim targets were also recommended. Progress in complying with emission targets would be assessed periodically. Exceeding the targets would trigger a regulatory emissions reduction program (such as an emission cap and incentive-based market trading program). The report indicates that State and Tribal participants will evaluate development of a regional emissions cap and trading regulatory program to achieve the emissions reductions. Finally, the report provides that the participants in the Commission process intend to design the emissions reduction strategy for EPA's consideration before it takes final regulatory action on the Commission's recommendations in order to create economic incentives for early reductions, and to provide flexibility and certainty to sources in planning future actions.

The EPA fully agrees with the importance of addressing existing visibility impairment in the Golden Circle parks and wilderness areas that is attributable to single or small groups of stationary sources. The EPA has retained its existing visibility protection program, and intends for States to continue making progress in addressing visibility impairment from such sources. The EPA is committed to working with States, Tribes, and Federal Land Managers to address such impairment.

Likewise, EPA is fully supportive of long-term efforts by the States in the region addressing regional haze in the Golden Circle to address visibility-impairing emissions from stationary sources. Indeed, a centerpiece of today's proposal is a long-term strategy, to be adopted by affected States throughout the country. The proposed long-term strategy requirements are intended to provide a flexible air quality planning framework to facilitate the interstate coordination necessary to reduce regional haze visibility impairment in mandatory Class I Federal areas nationwide.

The long-term strategy proposed herein would be due one year after issuance of this proposal as a final rule, estimated to be due in 1999. Implementation would occur in phases, with initial planning for additional monitoring, emissions tracking and modeling to begin in 1999, and identification of stationary sources and potential emissions reductions to occur by 2001. Emissions control strategies would be due in 2003, or 2005 for States preparing PM_{2.5} nonattainment control strategy SIP revisions, and revised every three years thereafter. The planning schedule for the long-term strategy has been developed to facilitate integration with State planning for the PM and Ozone NAAQS. Similarly, EPA intends to address specific visibility emissions control strategies in more detail in conjunction with the PM and Ozone NAAQS control strategies.

In today's proposal, EPA has not included the Commission's specific stationary source emissions target and related provisions as regulatory requirements. However, the proposed rule in no way precludes the States in the GCVTC transport region from expeditiously adopting, on their own initiative, these control strategy provisions. These States are well-situated for achieving earlier reductions in light of the technical and policy groundwork established during the Commission's deliberations, and the importance of protecting visibility in the premiere natural resources that comprise the Golden Circle. The EPA requests public comment on whether it should instead adopt, or adopt with modification, these specific recommendations.

d. Mobile Sources. The Commission determined that mobile source emissions are projected to decrease through about the year 2005 due to improved control technologies but was concerned that emissions would increase thereafter. The Commission recommended a number of national, regional and local strategies related to mobile sources. Recognizing the

problems with establishing a national mobile source control program based strictly on the impact of the Golden Circle, the Commission report “promotes” several national initiatives that may benefit air quality in the transport region.

The EPA agrees with the central policy embodied in the Commission’s recommendations on mobile sources—that there are certain categories of pollution sources that especially lend themselves to national control strategies. The EPA administers and is developing programs under Title II of the Clean Air Act that address emissions from motor vehicles, highway and non- road heavy-duty engines, marine engines (including recreational outboard and personal watercraft), small gasoline engines and locomotives. The EPA will continue to implement these and other nationally-applicable programs, such as the new source performance standards and national emission standards for sources of hazardous pollutants, that provide important air pollution protection in the Commission Transport region and other areas of the country.

e. Prescribed Fire. The Commission made a number of recommendations related to minimizing the emissions and visibility impacts of both prescribed fire used by Federal land management agencies to maintain ecosystem balances and agricultural/silvicultural prescribed burning practices. The recommendation directed at EPA suggested that EPA require all Federal, State, Tribal, and private prescribed fire programs to incorporate smoke effects in planning and application by the year 2000.

The EPA has long recognized that prescribed fire can have significant effects on visibility. The EPA’s current visibility protection regulations require States to consider smoke management techniques for agricultural and forestry management purposes in developing long-term strategies. This requirement would apply to the long-term strategies for addressing regional haze visibility impairment proposed in this notice. Further, EPA currently participates in an interagency forum on prescribed fire to support on-going efforts to address these issues.

f. Air Pollution Prevention, Future Regional Coordinating Entity, and Areas in Need of Additional Research. The Commission recommended a number of regional, State, and local policies for air pollution prevention including energy conservation, increased energy efficiency, promotion of the use of renewable resources for energy production, and enhanced public education and outreach. The EPA strongly supports pollution prevention initiatives and has taken numerous steps to promote pollution prevention under the Pollution Prevention Act of 1990, the Emergency Planning and Community Right-to-Know Act, and other environmental statutes EPA administers. The EPA has carried out important voluntary pollution prevention programs, such as the Green Lights program. Under this program, EPA uses education and outreach to encourage businesses, public schools, and government agencies to reduce the amount of electricity used while maintaining lighting quality.

The Commission determined that there is a need for a group like the Commission to oversee, promote, and support many of its recommendations, and urged EPA to provide support for such an organization. States and Tribes in the Commission’s transport region are currently discussing the formation of an organization to succeed the Commission. At the request of the States and Tribes, EPA has participated in and supported these efforts.

The Commission’s report identified areas warranting further research and analysis, including the impact from emissions within and near the Golden Circle Class I areas, the contribution of road dust, and emissions from Mexico. EPA especially encourages the States and Tribes to address the informational deficiencies that would inhibit development of long-term strategies to address regional haze visibility impairment.

g. Conclusions. The preceding discussion addresses the key Commission recommendations to EPA. As discussed here and elsewhere in today’s action, the Commission’s recommendations have informed EPA’s proposed rules. The EPA seeks public

comment on the manner it has proposed to address the Commission's recommendations in this rulemaking, and EPA requests alternative suggestions for addressing the recommendations.

D. Overview of Proposed Revisions to Visibility Regulations

In developing the proposed revisions to the visibility regulations, EPA has tried to maintain as much of the existing regulatory language as possible, where such provisions appropriately apply to both reasonably attributable and regional haze visibility impairment. This approach is intended to minimize the level of effort needed for States to adopt new regulations and revise SIPs in order to address regional haze requirements, particularly for those States that have already adopted plans to implement the existing visibility program.

Several new elements of the visibility protection program are proposed in this notice. These elements are outlined below and discussed in greater detail in subsequent subsections of this notice.

- Expanded applicability of the regional haze program to all States, the District of Columbia, and certain territories.
- Establishment of presumptive reasonable progress targets.
- Requirements for periodic SIP revisions, including periodic demonstrations by States on whether reasonable progress targets are being achieved for each mandatory Class I Federal area.
- Analysis of sources contributing to regional haze impairment, including sources potentially subject to BART.
- Expansion of the current monitoring network as necessary to be representative of all mandatory Class I Federal areas.
- Development of strategies to reduce emissions of visibility impairing pollutants in conjunction with strategies to meet the new and revised NAAQS for PM_{2.5} and ozone.

The current program for addressing reasonably attributable impairment remains in place, including, for example, requirements for BART and a long-term strategy to address "reasonably attributable" visibility impairment, State consultation with FLMs on SIP revisions, consideration of integral vistas, and visibility monitoring. Further, the program requires the review of new source impacts on visibility in mandatory Class I Federal areas to prevent future visibility impairment. The existing regulations have been in place for nearly seventeen years and EPA is not reopening those regulations for public comment in this rulemaking. However, EPA seeks public comment on the regulatory changes proposed in this action related to integrating the new regional haze provisions with the existing visibility regulations. For example, EPA seeks comment on its proposed revisions to 40 C.F.R. 51.306(c) to integrate periodic long-term strategy revisions for regional haze with the periodic long-term strategy assessments for reasonably attributable visibility impairment. The EPA is also seeking comment on a revision to 40 C.F.R. 51.306(a)(1) which requires the State to address any certification of reasonably attributable impairment that occurs 6 months before a long-term strategy is due in the next long-term strategy revision. This revision clarifies that the State has the same grace period in considering certifications of impairment as when the original visibility SIP was developed. Beyond specific revisions proposed today, comments on the existing regulations are generally outside of the scope of this proposal.

The EPA is proposing to make technical corrections to cross-references to other rules within the existing rule language to reflect changes in the numbering of Part 51. In addition, EPA is proposing to add "light extinction" to the list of indices (visual range, contrast, and coloration) currently used to define "visibility impairment" in 40 C.F.R. 51.301(x) and referenced throughout the rule. Light extinction is the underlying physical property of the

atmosphere that determines visual range. EPA is also proposing to coordinate the Federal Land Manager notification, consultation, and timing requirements for regional haze plan development and revision with those of the current program addressing reasonably attributable impairment. This approach will allow for efficient coordination between the State and Federal land managers on comprehensive visibility SIP submittals and revisions.

The proposed revisions establish a new framework for States to follow in revising their visibility SIPs. The key milestones of the proposed visibility program are contained in the table below:

DATE	ACTIVITY
July 1997	Promulgation of revised ozone and PM NAAQS and proposal of revised visibility regulations.
February 1998	Promulgation of revised visibility regulations.
March 1998	Commence regional planning activities as necessary.
February 1999	States submit new/revised visibility SIPs, including monitoring plan, identification of potential BART sources, and schedule for assessing BART and associated emission reductions by February 2001, long-term strategy provisions (including procedures for future plan requirements), revisions as necessary to address section 110(a)(2) requirements relevant to regional haze, and provisions / procedures for State coordination with FLM.
February 2000	New monitoring sites online.
February 2001	State assessment of BART sources to be completed and available for use in regional modeling and control strategy development.
July 2003	SIPs due for emission reduction strategies for regional haze. First demonstration of progress in relation to reasonable progress targets due. One year monitoring reporting begins. (July 2005 for States preparing PM _{2.5} nonattainment control strategy SIPs.)
July 2006 (and every 3 years thereafter)	Visibility SIP revision to demonstrate progress in relation to reasonable progress targets, and to adjust emission reduction strategies as necessary. (July 2008 for States noted above.)

NOTES

1. Section 169A(a)(1) establishes “as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from man-made pollution.” *See also*, 40 C.F.R. § 51.300(a). Despite the fact that Congress established this goal in the 1977 Clean Air Act Amendments, the EPA acknowledges that “visibility impairment caused by air pollution occurs virtually all of the time at most national parks and wilderness area monitoring stations. . . .” 62 Fed. Reg. 41, 139 (1997). How do the proposed rules try to address this problem?

2. Section 169A(a)(4) requires EPA to promulgate regulations to assure “reasonable progress toward meeting the national goal specified in paragraph (1)” and quoted above in note 1. The proposed rules would require all states to establish in their SIPs, “long-term (10-15 years) strateg[ies] for making reasonable progress toward the national goal. . . .” *Id.* at 41,158. For any mandatory Class I Federal area where current conditions for the average of 20 percent most impaired or 20 percent least impaired days exceed natural background by one “deciview”

or more these strategies must include a plan to meet the “reasonable progress target.” *Id.* at 41,159. A “deciview” is “a means of expressing atmospheric light extinction.” It is “an atmospheric haze index that expresses uniform changes in haziness. . . . A one deciview change is a small but noticeable change in haziness under most circumstances when viewing scenes in mandatory Class I Federal areas.” *Id.* at 41,145, 41,157. A “reasonable progress target” is proposed to be defined as an improvement in the average of the 20 percent most impaired days, equivalent to one deciview over either 10 or 15 years, and no degradation in the average of the 20 percent least impaired days each year. *Id.* at 41,157.

3. Where the interstate transport of air pollutants from one or more states contributes significantly to visibility impairment of Class I areas, the EPA may establish a “visibility transport region.” § 169B(c)(1). Upon establishing the region, EPA must establish a “visibility transport commission.” § 169B(c)(2). The commission is responsible for—(1) assessing data relevant to the impact of air pollution on visibility; and (2) issuing a report recommending measures to remedy adverse visibility impacts. § 169B(d). EPA was required to establish a visibility transport commission for the region affecting the Grand Canyon National Park by November, 1991. § 169B(f).

4. Under the original visibility rules which had been promulgated by the EPA, states with mandatory Class I Federal areas were required to submit revised SIPs to address visibility problems affecting those Class I areas. 45 Fed. Reg. 80,084 (1980). Only the State of Alaska submitted the revised SIP as required by the EPA rules, and in 1982, several environmental groups sued to challenge the EPA’s failure to require the other states to submit revised SIPs. The lawsuit was eventually settled and new deadlines were established for states to submit their revised SIPs. *See* 49 Fed. Reg. 20,647 (1984). A concrete example of how the visibility program can dramatically impact individual pollution sources involved the Navajo Generating Station (NGS) in Page, Arizona. The EPA found that the NGS was adversely impacting visibility in the Grand Canyon National Park. The parties concerned about these impacts eventually reached an agreement with the NGS that required the owner of the facility to spend \$430 million in capital costs for the installation of scrubbers. In addition the company was required to spend \$89.6 million in additional annual costs to operate the new equipment. *See* 56 Fed. Reg. 50,172 (1991).

5. In the 1990 Clean Air Act Amendments, Congress appropriated \$40 million over five years for research on visibility. § 169B(a)(1). As required by § 169B(b), the EPA published a report in February, 1995 assessing and evaluating current research and information on visibility. *Interim Findings on the Status of Visibility Research*, Office of Research & Development/Office of Air and Radiation, USEPA (February, 1995) (hereafter *Interim Findings*). Four major reports were summarized and discussed. The National Research Council report, *Protecting Visibility in National Parks* was published in January, 1993. That report “outlined working principles for assessing the relative importance of anthropogenic emissions sources that contribute to haze in Class I areas and for considering various alternative source control measures.” *Interim Findings* at 3. A second report was prepared in 1993 by the Interagency Monitoring of Protected Visual Environments (IMPROVE) network. The IMPROVE program was designed to (1) establish current background visibility in Class I areas; (2) identify chemical species and emission sources responsible for existing impairment; and (3) document long-term trends. *Interim Findings* at 13. The 1993 IMPROVE report found that the physical and chemical properties of particles and chemicals affect the light absorption and light scattering efficiency of the atmosphere. Among the important

properties identified were size, acidity, and chemical composition. *Id.* at 14. The 1992 National Acid Precipitation Assessment Program (NAPAP) Report to Congress (issued in June, 1993) also included key findings on visibility. Consistent with the 1993 IMPROVE report, the NAPAP report found that acid-related pollutants, primarily sulfur dioxide and sulfate aerosols, “absorb water vapor during long transport periods, scatter light, and contribute to regional haze.” *Id.* at 17. Finally, a 1993 EPA Report to Congress “addressed the changes that are expected in visibility conditions in Class I areas “as a result of provisions of the 1990 amendments other than those relating directly to visibility. *Id.* at 18. That report projected improvements in the eastern United States, but uncertainty in the Western United States. *Id.*

6. Even assuming that the regional haze regulations are ultimately promulgated in final form, their implementation will likely be substantially delayed. In the Transportation Equity Act for the 21st Century (TEA-21), Pub. L. 105-178 (1998), Congress tied the revisions of state implementation plans, which are required under the proposed rules, to the timetable established for submitting PM_{2.5} designations. Because TEA-21 gives the EPA until December 31, 1999 to establish its PM_{2.5} monitoring network, requires EPA to collect three years of monitoring data from that network, and gives the states an additional year to submit their PM_{2.5} designations under § 107(d)(1), revisions to SIPs to meet the requirements of the regional haze regulations appears to have been pushed back until at least December 31, 2003. *See* TEA-21 § 6102.

PROBLEM #4: VISIBILITY PROTECTION

The Lincoln Head Copper Smelter, built in 1965 and located in the State of Crow, is adversely affecting the visibility in the Frosty Buttes National Park, a Class I Federal area where visibility has been identified as an important value. Frosty Buttes is located in the State of Sioux, which is adjacent to and immediately east of the State of Crow.

The EPA has approved revisions to the SIPs for both the State of Crow and the State of Sioux to control emissions from those states which may impair visibility. With respect to the Lincoln Head Smelter, the Crow SIP provides that BART requires no additional pollution control. What authority, if any, does the EPA, the State of Sioux, or the National Park Service (which manages Frosty Buttes) have to override the Crow SIP and require the Lincoln Head Smelter to adopt additional pollution controls measures as may be necessary to achieve the Act's goal of remedying the existing visibility impairment. *See* §§ 110(a)(2)(D); 169A(b)(2); 169A(d); 169B(c). Note that the Federal Land Manager's principal authority falls under § 165(d). That provision has historically been applied only to permits for new or modified major emitting facilities. Is it possible that § 165(d) could be construed to apply to permit applications for any major emitting facilities (as defined at § 169(1)) that are filed under the new program for permits established under the 1990 Amendments? *See* §§ 502; 503.

8 MONITORING AND MODELING

As we have seen, the Clean Air Act requires the EPA to establish ambient air quality standards and to set emission limitations for point sources as necessary to insure that those standards are actually being met throughout a region. But how does the EPA measure emissions from a source, and how does it predict the impact on ambient air quality that will as a result of contributions from a single source and from multiple sources? The answer lies in the sciences of monitoring and modeling.

Monitoring informs the regulatory agency about emissions from a point source, or about the ambient air quality at the monitoring site. Computer models are generally used to determine ambient air quality beyond the monitor site, and to predict ambient air quality changes that will result from the construction of new sources of air pollution.

The 1990 Clean Air Act Amendments imposed new monitoring requirements on various sources. In particular, sources subject to the acid deposition provisions of the law (generally, fossil fuel fired power generating facilities) must install a “continuous emission monitoring system” (CEMS) or its equivalent. § 412(a). These computer-driven monitors provide a constant record of the emissions from a source. *See also* § 402(7). In accordance with § 412(c), the EPA has promulgated CEMS rules which generally require such monitoring for opacity and for all SO₂, NO_x, and CO₂ emissions. 40 C.F.R. § 75.10 (1995).

Major stationary sources that are not subject to the acid deposition program under Title IV of the Act are nonetheless required to employ “enhanced monitoring”, and to submit “compliance certifications.” § 114(a)(3). Compliance certifications must include:

- (A) identification of the applicable requirement that is the basis of the certification;
- (B) the method used for determining the compliance status of the source;
- (C) the compliance status;
- (D) whether compliance is continuous or intermittent; and
- (E) such other facts as the Administrator may require.

Id; *see also*, § 114(a)(1). In addition, the permit provisions in Title V of the Act authorize the EPA to adopt rules that “prescribe procedures and methods for determining compliance and for monitoring and analysis of [regulated] pollutants . . . , but continuous emissions monitoring need not be required if alternative methods are available that provide sufficiently reliable and timely information for determining compliance.” § 504(b). Does this latter requirement suggest that CEMS is the presumptive method for monitoring unless a reliable alternative can be found? Does the alternative need to be as reliable as CEMS?

In 1997, the EPA promulgated rules designed to meet the requirements for enhanced monitoring and compliance certification under § 114(a)(3) of the Act. 62 Fed. Reg. 54,900 (1997), *to be codified at* 40 C.F.R. Parts 64, 70, and 71. The approach adopted by the EPA is described as “compliance assurance monitoring” or “CAM”, and reflects the EPA’s position

that obtaining ongoing compliance is a two-step process—

First the Agency must determine whether properly designed control measures—including as applicable, control devices, process modifications, operating limitations or other control measures—are installed or otherwise employed, and that those control measures are capable of achieving applicable requirements. . . . The second step is to monitor to determine that the source continues to meet applicable requirements. An important part of this second step is to assure that control measures, once installed or otherwise employed, are properly operated and maintained so that they do not deteriorate to the point where the owner or operator fails to remain in compliance with the applicable requirements.

Id. at 54,902. To achieve these goals, the final rules suggest that “two basic approaches” can be used. According to the EPA—

One method is to establish monitoring as a method for directly determining continuous compliance with applicable requirements. . . . Another approach is to establish monitoring for the purpose of: (1) documenting continued operation of the control measures within ranges of specified indicators of performance . . . that are designed to provide reasonable assurance of compliance with applicable requirements; (2) indicating any excursions from these ranges; (3) responding to the data so that these excursions can be corrected.

62 Fed. Reg. 54,902 (1997). The EPA opted for the second approach, which essentially provides for monitoring not emissions but rather the devices and processes used to control emissions. Where problems are identified under this method the rules provide (but do not require) the EPA or the state to require a “quality improvement program” which includes both a problem investigation phase and a corrective action phase. Does the CAM approach as described by the EPA meet the requirements of §§ 114 and 504 of the Act? Is this the approach that Congress intended when it required “enhanced monitoring”? Will it “provide sufficiently reliable and timely information for determining compliance” as required by § 504(b)?

In conjunction with the enhanced monitoring rules, the EPA issued final rules that allow “any credible evidence” (ACE) to be used to prove violations of a facility’s emission standards, even if the evidence comes from a source other than the compliance test method used by the facility. 62 Fed. Reg. 8,314 (1997). Although simple in form, the ACE rule could have significant ramifications for enforcement. This rule also codifies the result in *Sierra Club v. Public Service Company of Colorado*, 894 F. Supp. 1455 (D. Colo. 1995). In that case, the Sierra Club filed a citizen suit against Public Service alleging more than 19,000 alleged violations of opacity standards established for the Company’s Hayden power plant in northwestern. Evidence of the violations was established from the records of the company’s own continuous opacity monitor. Although the reliability of this data was not questioned, Public Service claimed that violations could only be proved through a technique known as Method 9, which was the approved method used by inspectors to ascertain opacity violations. The court however, agreed with the Sierra Club, finding that the opacity monitors provided reliable evidence of the alleged violations. The final credible evidence rules are discussed in greater detail in Chapter 10, *infra*.

Because of the importance of monitoring and modeling to the clean air effort, the

courts have frequently been asked to grapple with these issues. But the highly technical nature of the problem and the difficulty that the courts have had understanding the science seems inevitably to result in deference to agency choices. Below is a sampling of cases which wrestle with the technical issues surrounding the use of monitoring and modeling.

PPG INDUSTRIES V. COSTLE

659 F.2d 1239 (D.C. Cir. 1981)

BAZELON, Senior Circuit Judge:

In 1971, pursuant to the Clean Air Amendments of 1970 the Administrator of the Environmental Protection Agency (EPA) promulgated a series of national ambient air quality standards, known as the NAAQS, for sulfur oxides. The standards established maximum acceptable average concentrations for one-year periods, 24-hour periods, and 3-hour periods. Under the Act and the EPA regulations, if the outdoor air of a locality exceeds either the 24-hour or 3-hour standard more than once during a year, construction of new pollution sources would be restricted and existing sources could be restricted in the technology they may employ.

Prior to 1979, compliance with the 24-hour NAAQS for sulfur oxides, 40 C.F.R. § 50.4(b), was generally determined by analyzing daily average concentrations based on air samples collected during midnight-to-midnight periods. In 1979, however, pursuant to section 110 of the Clean Air Act, as amended, the Administrator promulgated a new rule which implemented a national air quality monitoring system. In promulgating the rule, EPA purported to require the new monitoring system to measure sulfur oxide concentrations continuously and to calculate hourly running averages for 24-hour periods, rather than only midnight-to-midnight averages. The use of running averages would reveal whether concentrations of sulfur oxides exceed the NAAQS level for any 24-hour period during the year, whereas midnight-to-midnight measurement would only reveal exceedances for 365 specific 24-hour periods. Depending on the times of the day at which sulfur oxide concentrations reach their high and low points, a locality with concentrations that exceed the level set by the standard for many 24-hour periods would be detected by the running average technique but would escape detection under the midnight-to-midnight sampling method.

These appeals challenge the 1979 rule that requires the running average technique for measuring sulfur oxide concentrations. Petitioners operate major stationary sources of sulfur dioxide. They would face significant economic burdens if the air monitoring statistics showed their localities to be in violation of the NAAQS for sulfur oxides. Petitioners charge that the challenged rule, in effect, revises the 24-hour NAAQS for sulfur oxides, and that it therefore should have been promulgated according to the exacting procedures set forth in section 307(d) of the Clean Air Act. Respondent argues that the rule does not constitute a revision of the NAAQS, but merely establishes closer and more uniform air quality monitoring, as mandated by section 319. Therefore, respondent contends, the agency properly proceeded by informal rulemaking, 5 U.S.C. § 553 (1976).

The scope of review, as well as the lawfulness of EPA procedures, depends upon the characterization of the agency's action. If the rule effects a revision of the NAAQS, then its adoption would require the procedures set out in § 307(d), which are more demanding than those of the Administrative Procedure Act (APA). At the same time, however, § 307(d) would preclude our invalidation of the rule on procedural grounds without a much stronger showing

of prejudicial error than is required in cases under the APA. If, on the other hand, the rule does not effect a revision of the NAAQS, then it would have to be adopted only according to the APA procedures.

To decide whether the agency's action amounts to a revision of the 24-hour NAAQS for sulfur oxides, this court must resolve a fundamental ambiguity in the meaning of the NAAQS itself. The question, explained more fully below, is whether an exceedance of the standard's "[m]aximum 24-hour concentration" can be computed on the basis of *all* periods of twenty-four consecutive hours ("running averages"), or whether it must be computed on the basis of midnight-to-midnight periods only. Unfortunately, EPA has compiled no administrative record directed toward that issue. Petitioners were apparently caught off-guard because of the obscurity of the notice given. They claim they were unaware that this issue was presented in the challenged rulemaking, and so offered no comments at all. We thus find ourselves in a "catch-22": the agency's procedures have produced no visible basis upon which to review its interpretation of the 24-hour NAAQS; yet, without reviewing that interpretation, we cannot determine the adequacy of its procedures. We, therefore, must examine the 24-hour sulfur oxide NAAQS directly, but only to the extent necessary to determine whether EPA's interpretation was not wholly unreasonable.

We conclude that the 24-hour NAAQS does not require a midnight-to-midnight sampling period, and that the new rule, therefore, does not revise that standard. Therefore, EPA's rulemaking proceeding under the APA, rather than the Clean Air Act, was not facially unlawful. We also find, however, that EPA failed to publish a critical provision of the new rule in the Federal Register and thereby violated the publication requirement of the APA. Belated publication cannot cure this omission. Because the proposed rule did not notify the public that the use of running averages was being proposed and because that proposal was an important aspect of the rule, EPA failed to comply with the notice requirement of the APA in its attempt to mandate the use of running averages. We therefore remand the record to the EPA to consider that part of the rule, after proper notice, by whatever procedures are adequate to develop a proper record for decision. Further, we admonish the parties that an important interpretation of an agency standard must, in the first instance and in clear fashion, be carried out by the agency itself, with review by the court following only upon an adequate record.

* * *

The Administrator of EPA promulgated primary and secondary sulfur oxides NAAQS on April 30, 1971, 36 Fed. Reg. 8,186.

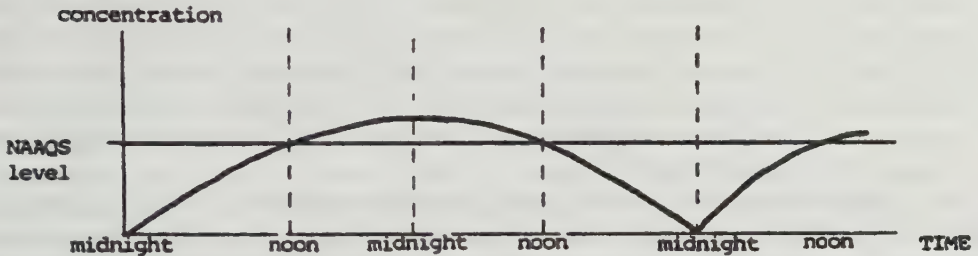
* * *

The primary NAAQS set maximum average concentrations for long-term (one year) and short-term (24-hour) periods; the secondary NAAQS sets a maximum 3-hour average concentration. The 24-hour and 3-hour concentrations are "not to be exceeded more than once per year." All concentrations are to be measured by "the reference method," described in Appendix A to 40 C.F.R. Part 50 [hereinafter Appendix A], or by an "equivalent method." A separate set of procedures is set out in 40 C.F.R. 53.30-53.32 to test a "candidate method" against the reference method in order to certify it as "equivalent."

The reference method is not automated: air is sampled through a "gas bubbler" for a given length of time, then removed and chemically analyzed. The average concentration of sulfur dioxide for that period is determined from the contents of the bubbler. Appendix A provides for several sampling periods in order to accommodate a variety of data-gathering

tasks⁷ Until about 1977, compliance with the 24-hour NAAQS was determined by analyzing daily average concentrations, based on 24-hour samples. The reference method specifies that 24-hour samples be collected “from midnight to midnight.” Thus, from a given monitoring station, not more than 365 24-hour samples could be tested by the reference method each year. If the “second highest” concentration among these samples exceeded the prescribed level for the 24-hour NAAQS, a non-attainment designation would be made.

It is possible, however, for a locality to experience 24-hour concentrations of sulfur dioxide that are above the NAAQS concentration levels and yet go undetected by a monitoring station using the 24-hour sampling technique of the reference method. Not only does the use of 24-hour samples under the reference method allow sampling for only 365 out of the infinite number of twenty-four hour periods during the year, it requires that each sampling period begin and end at the same times every day. As a result, sulfur dioxide concentrations that exceed the NAAQS level during a period other than midnight to midnight, for example would not be detected unless the average concentration also exceeds the standard during a contiguous midnight-to-midnight period. The graph below illustrates the importance of the sampling period in identifying periods of concentration above the standard:



If the average concentration of sulfur dioxide in a locality follows the path charted either at discrete times during the year or regularly the 24-hour sampling technique of the reference method would not detect concentrations higher than the NAAQS levels. In this example, continuous monitoring and calculation of running averages, in contrast, would indicate an exceedance of that level for the 24-hour periods beginning close to noon and ending at the same time the next day.

Over the years, a number of newer methods have been certified as “equivalent,” and have

⁷ The reference method is used not only for designating nonattainment areas, but also for making the various other determinations required of monitoring stations under the state plans. Air quality control regions, for example, are to be given priority classifications based upon measured or estimated concentrations for various pollutants. See 40 C.F.R. § 51.3(a). Steps taken to prevent “significant deterioration of air quality,” *id.* § 51.24, require the measurement of “baseline concentrations” and “ambient air increments” for sulfur dioxide. See *id.* § 51.24(b)(11) and § 51.24(c). Air pollution emergency episodes are triggered when the 24-hour average sulfur dioxide concentration reaches 2,260 micrograms/cubic meter, twice as high as the highest NAAQS concentration. See *id.* § 51.16. To make these determinations, the state plans require that significant amounts of data be gathered, generally by reference or equivalent methods. See *id.* § 51.13(g).

gradually replaced the reference method at many air-monitoring facilities. These newer methods permit instantaneous and continuous monitoring of sulfur dioxide concentrations. Running averages of concentrations can be calculated for continuous 24-hour periods. Using such methods, it becomes easier to detect exceedances of the NAAQS level for any period of 24 consecutive hours, whether it runs from midnight to midnight or not.

In February, 1977, EPA prepared and distributed to the state monitoring offices a revised "Guidelines for the Interpretation of Air Quality Standards" [hereinafter *Guidelines*]. The *Guidelines* took advantage of the newer techniques to request data based on running averages. EPA recommended that, wherever continuous monitors were available, running 24-hour average concentrations should be calculated, with each hour beginning a new 24-hour period. *Id.* The *Guidelines* also provided a methodology for computing the statistics used in determining compliance with the 24-hour NAAQS. *Id.* Any 24-hour period with an average concentration greater than the standard would be deemed an exceedance. If a locality experienced two such periods that did not overlap in one year, the locality would be deemed out of compliance. The *Guidelines* were not published in the Federal Register.

II. THE CHALLENGED RULEMAKING

In August, 1977, Congress again amended the Clean Air Act. It added section 307(d), which made the promulgation or revision of any NAAQS subject to demanding procedures. It also added a new section 319, directing the EPA Administrator to "promulgate regulations establishing an air quality monitoring system throughout the United States which . . . utilizes uniform air quality monitoring criteria and methodology." The section 319 regulations were not subject to the requirements of section 307(d), but were to follow "notice and opportunity for public hearing."

One year later, EPA proposed rules to implement section 319. 43 Fed. Reg. 34,892 (1978). The notice expressly stated that the EPA's informal rulemaking procedures would be followed. *Id.* at 34,896. The proposed rules required each state to maintain a network of "state and local air monitoring stations" (SLAMS), some of which would be designated "national air monitoring stations" (NAMS). The NAMS were to be equipped with certified monitoring devices capable of continuous measurement. *Id.* at 34,918. The proposed rules also contained about 30 pages of technical appendices designed to assure the quality and uniformity of data collected by these networks. One of these appendices Appendix F required each station in the SLAMS network to calculate and report annually, among other statistics, the "[h]ighest and second highest 24-hour averages" for sulfur dioxide, presumably to determine compliance with the 24-hour NAAQS. *Id.*, at 34,928. A footnote to that requirement [hereinafter Footnote 3] specified that the averages should be "[b]ased on nonoverlapping values computed according to procedures described in reference (1)." "Reference (1)" was identified at the end of the appendix as the Revised *Guidelines* document, discussed *supra*. Thus, the proposed rule attempted to adopt the use of running averages as a means of determining compliance with the 24-hour NAAQS for sulfur oxides. Previously, EPA had only recommended that method.

The proposed rules were adopted with little change in May, 1979. None of the comments indicated a contradiction between the proposed monitoring and reporting method and the 24-hour NAAQS. *See* 44 Fed. Reg. 27,567 (1979). The only discussion of reporting methods came from state environmental agencies, which had earlier received the *Guidelines*. We are informed by counsel that petitioners did not comment because they were unaware that the rule would affect the stringency with which the NAAQS was applied. Although running

averages were apparently being reported by some monitoring stations at that time, petitioners did not learn of this until the county in which they do business was designated a nonattainment area. That occurred in October, 1978, at the very end of the comment period for the challenged rulemaking.

* * *

Petitioners argue that a running average requirement creates a significantly more stringent 24-hour NAAQS. This was done, they assert, without substantive support and in violation of the procedures provided for such changes by the Clean Air Act, § 307(d)(1)(A). In addition, because EPA adopted a portion of the rule by means of an obscure reference, never incorporated into the Federal Register—cited in a footnote to an appendix to a 46-page rule on air quality reporting—petitioners argue that the agency violated the publication and notice requirements of the APA.

III. DISCUSSION

* * *

A. The 24-Hour Standard

To perform our reviewing function, we must reach at least a preliminary interpretation of the 24-hour NAAQS. Whether any procedural errors were sufficiently prejudicial to warrant further notice and comment, for example, may depend on whether the APA or the more demanding test of the Clean Air Act § 307, is applied. In any event, our opinion should inform EPA as to the procedures that are statutorily required on remand. On the basis of our own review of the record before us, we believe that the reference method of Appendix A does not confine the 24-hour sulfur dioxide NAAQS to midnight-to-midnight sampling periods. Accordingly, we believe EPA acted within its authority when it attempted to change the reporting requirements so as to mandate running averages through informal APA rulemaking. Our conclusion, however, is not meant to prevent the agency from reaching a different interpretation of the NAAQS on remand.

Ordinarily, we would accord the greatest deference to EPA's construction of its own standard, as well as to its choice of procedures. In this case, however, the agency's construction can only be inferred from its actions; we have no direct and contemporaneous statement of its views on the meaning of the NAAQS. We therefore look principally to the language and structure of the regulatory scheme, and to the policies that underlie it. Our interpretation is based on three grounds. First, the reference method itself does not clearly mandate midnight-to-midnight samples. Second, a change in method does not necessarily entail a change in the NAAQS. Third, running averages are consistent with the apparent purpose of the 24-hour NAAQS.

* * *

B. Notice

A central policy issue raised by the new rule is whether the 24-hour NAAQS for sulfur oxides *should* only apply to midnight-to-midnight periods. The most obvious reason for EPA's silence on that issue is that no apposite comments were offered at the rulemaking. While an absence of comments in no way implies inadequate notice, it does alert us to that possibility. Petitioners charge that essential provisions in both the proposed and final rules cannot be understood without the *Guidelines* document, which was neither published nor properly incorporated in the Federal Register. We agree.

In most respects, the agency's notice met the APA's notice requirement. It included "the terms . . . of the proposed rule," 5 U.S.C. § 553(b)(3) (1976), and was fully adequate to

apprise the public “of the ‘subjects and issues involved’ so that (interested parties) may offer informed criticism and comments.” *Ethyl Corp. v. EPA*, 541 F.2d 1, 48 (D.C. Cir.), *cert. denied*, 426 U.S. 941 (1976). The notice, however, did not fully meet the APA’s notice requirement. In one particular, the rule itself, without the *Guidelines*, is extremely unclear. By basing certain critical compliance data on “nonoverlapping values,” footnote 3 appears simply to demand that reported exceedances not overlap. 40 C.F.R. Part 58, App. F at 2.1.2 & fn.3. The provision does not in itself effect a change in the long-standing practice of accepting midnight-to-midnight measurements. Unless the *Guidelines*’ definition of “nonoverlapping values” is read into the rule, in other words, we cannot say that footnote 3 requires running averages to be reported. Nor can we find that the same language in the proposed rule notified the public that such a requirement was being considered.

* * *

IV. CONCLUSION

For the reasons set forth, the record is remanded so that respondent may consider the issues raised by petitioners in a properly noticed rulemaking. The agency is free to conduct that rulemaking pursuant to the APA, and to continue using its *Guidelines* to encourage but not to require, the reporting of running averages. Certain materials lodged with this court belong, if anywhere, in the administrative record; petitioners’ motion to supplement the record on this appeal is accordingly denied. As stated above, this court is prepared to reconsider its interpretation of the 24-hour sulfur oxides standard if and when EPA has first addressed that issue.

So ordered.

NOTES

1. Why did PPG Industries object to EPA’s monitoring program? What effect did the court’s decision have on PPG’s objectives?

2. Following the court’s decision, EPA declined the invitation to engage in a new rulemaking proceeding. What effect do you think this has had on the monitoring program?

3. As described in *PPG Industries*, the monitoring program required by § 319 of the Act is carried out through a network of state and local air monitoring stations (SLAMS). 40 C.F.R. § 58.1, 58.20 (1995). A subset of these SLAMS sites from around the country make up the national air monitoring stations (NAMS). 40 C.F.R. §§ 58.30 (1995). The design of each network and the location of monitoring stations is the subject of detailed design standards. 40 C.F.R. Part 58, Appendix D (1995). The regulations also establish a computer system (SAROAD—Storage and Retrieval of Aerometric Data) for storing and reporting information relating to ambient air quality. 40 C.F.R. § 58.1(p) (1995).

4. In 1993, the EPA promulgated regulations which provide for the establishment of photochemical assessment monitoring stations (PAMS) for all serious, severe, and extreme ozone nonattainment areas. 40 C.F.R. § 58.40.

5. As Judge Bazelon notes in *PPG Industries*, monitoring data is used not only to ascertain nonattainment areas, but for other purposes such as establishing the baseline concentrations in PSD areas. 659 F.2d at 1243, n.7. Can modeling be used to determine whether an area should be classified as nonattainment? What possible problems do you see

with allowing its use in this situation? Note that the EPA's Guideline on Air Quality Models recommend modeling techniques for SIP revisions for existing sources and for new source reviews. 40 C.F.R. Part 51, Appendix W, I.0 (1996).

CLEVELAND ELECTRIC ILLUMINATING CO. v. EPA

572 F.2d 1150 (6th Cir. 1978), *cert. denied*, 439 US 910 (1978)

EDWARDS, Circuit Judge.

This court now has before it 23 petitions involving 32 companies filed against the United States Environmental Protection Agency which levy a variety of complaints against the federal agency's imposition of a sulfur dioxide (SO₂) pollution control plan for industrial discharges into Ohio's ambient air. The issues, which have been extensively briefed and argued, divide into general legal and procedural complaints which might be applicable to any one of the petitioners and a wider variety of specific complaints about the application of the EPA controls to particular power-generating or industrial plants. The cases dealt with in this opinion present the major general issues. Other individual cases, in addition to presenting one or more of the general issues, also present specific issues of fact. These are reserved pending a review of and reports on the factual disputes between the United States EPA and the individual petitioners.

The major issues dealt with in this opinion are:

* * *

3) petitioners claim that the major model employed by the United States Environmental Protection Agency in establishing specific emission limitations for particular plans is invalid both intrinsically and as applied. This model is termed the "Real-Time Air-Quality-Simulator Model" (hereinafter RAM).

* * *

3. The RAM Model

The petitioners in these cases center most of their criticisms upon the United States EPA's use of the Real-Time Air-Quality-Simulation Model ("RAM") which was employed by the agency in preparation of the Ohio sulfur dioxide control plan. RAM is a dispersion model which evaluates the interaction of a variety of facts in order to make predictions concerning the contribution to the pollution of the ambient air by specific plants. Its formula takes into account the capacity of each plant on a stack-by-stack basis and adds thereto smokestack height, surrounding terrain, and weather conditions. The model is operated on the assumption that the plants concerned operate 24 hours a day at full capacity and predictions are made for every day of the year. The ultimate standards are set according to the predicted second-worst day in terms of pollution results shown.

In comparison to all other prior methods of controlling pollution, RAM starts with a solid, ascertainable data base. This is the established design capacity of the power plants in question related to the sulfur content of the fuel used by each. From these factors the "emissions data" for each plant are developed.

When stack height, wind, weather, terrain, land use, etc., are figured in, the RAM model has the additional value of allowing its user to predict with considerable accuracy the relative contributions of specific power plant stacks to the points of maximum concentration

of pollution of the ambient air.

The RAM model was actually developed as a result of United States EPA's public hearings on the proposed plan for Ohio after five days of hearings on said proposed plan in Columbus, Cleveland, Cincinnati, and Steubenville at which petitioners involved in this current litigation were given an opportunity (which most accepted) to appear, testify, or submit comments. At those hearings the major source of criticism from industries, including some of the present petitioners, was that the plan then under consideration did not determine limitations by individual stacks to a sufficient degree. EPA in its brief in this case compares the "rollback" model employed in the preparation of the first Ohio plan to dispersion models like RAM, which is now the source of present controversy:

Unlike the rollback model, the dispersion models used in developing the promulgated plan allow a determination of the cause-effect relationship between the SO₂ emissions of the pollution sources in an area and the resulting ambient air quality. Therefore, it is possible to determine the proportion by which each source must reduce emissions to meet ambient standards. With the use of the rollback model, in contrast, each source's emissions in the region, whether or not they contributed to a pollution problem, were required to be reduced. Through dispersion modeling, emission limitations can now be set with increased precision. Overcontrol is minimized, so that the plan will still insure attainment and maintenance of the air quality standards, but at a much reduced cost to the sources. This is most clearly demonstrated by comparing emission limitations for power plants under the various plans. Power plants account for approximately 80% of the sulfur dioxide emissions in the State.

However, achievement of this added precision requires a massive analytical task. Tremendous amounts of data are required for each source analyzed. In addition to the emissions data for each source, dispersion modeling requires detailed information on all the factors that affect the dispersion of emissions. These include the height of the source's stack (or usually stacks), the spatial orientation of the sources to each other, the topography of the area and the effects it will have on dispersion, and, of crucial importance, detailed weather data for the area.

All this information is needed so that the computer analysis reflects actual conditions. For example, a gaseous pollutant emitted over a grassy field will disperse much differently than if the pollutant is emitted over a large urban area. There the dispersion will be affected not only by the local weather conditions but also by the greater turbulence caused by the different types of surface areas and heat sources throughout a city.

EPA goes on to point out that there are more than 1,000 point sources in the State of Ohio and more than 2,000 area sources, and that in relation to emission data, United States EPA utilized (among other sources) the data base on sulfur dioxide required to be reported to the State of Ohio under Ohio Rev. Code Ann. §§ 3704.03(I), 3704.05(C) (Anderson 1971 & 1976 Supp.).

It is, of course, no part of the responsibility of this court to determine whether the RAM model represents the best possible approach to determining standards for the control of sulfur dioxide emissions. Our standard of review of the actions of United States EPA is whether or not the action of the agency is "arbitrary, capricious, an abuse of discretion, or

otherwise not in accordance with law.” § 307(d)(9)(A). Thus, we are required to affirm if there is a rational basis for the agency action and we are not “empowered to substitute [our] judgment for that of the agency.” *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416 (1971).

Our review of this record convinces us that we cannot properly hold that United States EPA’s adoption of the RAM model for predicting sulfur dioxide emissions and for fixing maximum levels of sulfur dioxide emissions by specific sources was arbitrary and capricious or beyond the agency’s authority under the Clean Air Act. The factors cited below support EPA’s argument that the RAM model is supported by sufficient evidence so that EPA’s adoption cannot be held arbitrary and capricious:

1) United States EPA’s use of the “rollback” model—the principal basis of its first plan on which five days of public hearings were conducted in Ohio—was strenuously objected to by representatives of many of the present petitioners because it was not source-specific and, as a consequence, tended to require more stringent sulfur dioxide controls than would be required if plant capacity, fuel, population, smokestack height, wind and climate were all taken into account. Thus John R. Martin, of Smith & Singer Meteorologists, Inc., commented on behalf of Ohio utilities on the first United States EPA plan as follows:

More sophisticated modeling is necessary in all seven of the urban counties that use the proportional rollback. In this way, the Federal air quality standards can be attained without unnecessary SO₂ emission restrictions being imposed upon sources that do not contribute to an SO₂ problem. We recommend that new strategies be tested which will more fairly identify and control SO₂ sources that create SO₂ problems.

* * *

2) EPA responded to these arguments favorably by devising and adopting the RAM model which did employ all of these source-specific factors.

3) Further, as shown on the following charts, the United States EPA 1976-1977 SO₂ control plan (principally based upon the RAM and MAX-24 models) shows less stringent regulation on a county-by-county basis when compared to the Ohio SO₂ control plans originally promulgated in 1972 and 1974. In addition, when the comparison is limited to petitioners involved in this litigation, but including all of their facilities which were subjected to RAM modeling (and which are identified in this record), we find the plan slightly less strict on a facility comparison basis than the Ohio 1972 plan by a count of 24 to 17, and slightly more strict than the Ohio 1974 plan by a count of 23 to 20.

These comparisons do not, of course, necessarily demonstrate RAM’s accuracy. Rather, the comparison with Ohio’s previous plans (based upon the earlier rollback model which was used and accepted nationwide) tends simply to show that the choice of RAM modeling lay within administrative discretion.

4) While this court has currently before it some 32 petitioners protesting the United States EPA’s plan for SO₂ emission control for Ohio, it must be remembered that Ohio is estimated to have over 1,000 point sources and over 2,000 area sources of SO₂ pollution.

5) The RAM model is a general formula which can be applied to many individual sources of pollution to derive specific estimates of SO₂ emission rates for each. It employs a wider, more complete and more accurate data base than any prior model yet employed in devising a sulfur dioxide control strategy for a state or county. The crucial data with which the RAM model starts are the design capacity figure, plus the fuel sulfur content, from which is computed the SO₂ emission rate for each of the heating or power plants sought to be

controlled. Thus at the outset the RAM model starts with ascertainable specific figures for each source where disputes can be resolved by inspection of the equipment or fuel concerned. Many of the additional components such as stack height, wind direction, physical relationship of sources to each other, and topography of the area are similarly ascertainable as matters of fact. With the enormous financial stakes involved in this litigation, every effort to avoid disputes about the accuracy of the data base should be made. This record shows that United States EPA's design of the RAM model was brought about at least in large part by Ohio industry's requests for greater specificity and hence lower costs of compliance with National Air Quality Standards.

6) While there may yet be developed (and hopefully will be) a better method of establishing a control strategy for sulfur dioxide emissions than the RAM model, no one has yet come forward with such. Nor do petitioners point to any such.

This is not to ignore that petitioners do cite Enviroplan's claims of a superior model termed Air Pollution Evaluation System. This record shows, however, that United States EPA asked for the Enviroplan model and was refused, and is now refused the operative details of that model on the grounds of proprietary interest. While such withholding may be both defensible as a matter of law and understandable as a matter of economics, this court cannot consider Enviroplan's model as available technology until and unless it is fully disclosed and evaluated by United States EPA—the agency charged by Congress with making these decisions.

7) We recognize that this record does not present positive proofs of the accuracy of RAM's predictions. Thus far technology has not developed foolproof methods for validating predictions concerning pollution of the ambient air absent years of collection of monitoring data with far more monitors and far more personnel than have thus far been available. Obviously, also, the monitor locations and the receptor sites for the RAM predictions must correspond.

* * *

In summary, we hold that United States EPA's adoption and employment of the RAM model as its general working tool was based upon informal rulemaking which satisfied the requirements of both the Clean Air Act and the Administrative Procedure Act, and the due process requirements of the United States Constitution. Further, the record indicates that the Administrator's action in promulgating the sulfur dioxide control regulations for Ohio through use of the RAM model was a rational choice which was well within the discretion committed to him and his agency. We decline petitioners' requests to set the disputed orders aside on the ground that they are arbitrary and capricious.

NOTES

1. Why are the SO₂ standards set according to the predicted second-worst day in terms of pollution results shown? *See e.g.*, 40 C.F.R. § 50.4(b) (1996): "The level of the 24-hour standard is 0.14 parts per million (ppm), not to be exceeded more than once per calendar year."

2. In a related case, the Sixth Circuit upheld the MAXT-24 model which is designed for use in predicting SO₂ pollution from single sources in rural areas. *Cincinnati Gas & Elec. Co. v. EPA*, 578 F.2d 660 (6th Cir. 1978), *cert. denied*, 439 U.S. 1114 (1978). Unlike the

RAM model, which was designed for use in urban areas, MAXT-24 does not estimate comparative contributions of SO₂ pollution from a number of point sources. Rather it treats each source as an isolated problem. *Id.* at 661. In other respects, the MAXT-24 model closely resembles RAM. Notwithstanding the complaints by industry that RAM overestimates pollution potential, one study has found that RAM generally underestimates SO₂ concentrations by about 25 percent. STERN, BOUBEL, ET AL., *FUNDAMENTALS OF AIR POLLUTION*, 316 (Academic Press, 2d ed. 1984).

3. The EPA offers extensive guidance on the use of air quality models to address the impact from revisions of existing sources and the construction of new sources. Guideline on Air Quality Models, 40 C.F.R. Part 51, Appendix W (1996). In addition, the EPA maintains a "Model Clearinghouse" as the "focal point for review of air quality models" *Id.* at 3.3.1.1.

4. Shortly after the Court of Appeals sustained the RAM model, and the Supreme Court denied industry's petition for certiorari, EPA stayed enforcement of the emission limits required by RAM. It then proposed changing the emission limits to levels equal to the plants' uncontrolled emissions. Finally, it adopted a new model, CRSTER, which set new SO₂ standards, but for only two plants. (Recall that the CRSTER model was described in *Connecticut v. EPA*, *supra* at Chapter 6.) EPA again found itself in litigation, this time in a suit brought by several neighboring states and the Northern Ohio Lung Association. An excerpt from that case follows.

STATE OF OHIO V. EPA

784 F.2d 224 *aff'd on rehearing*, 798 F.2d 880 (6th Cir. 1986)

MERRITT, Circuit Judge.

This case seeks review of air pollution emissions limitations established by the Environmental Protection Agency for the smokestacks of two electric utility plants in the Cleveland area. Petitioners' principal argument is that the computer model, called CRSTER, used by EPA to forecast pollution from these plants and to set emissions limits allows too much pollution. They assert that this model should not be used in its present form to set emissions standards at the plant. We conclude that EPA acted arbitrarily in using the CRSTER model to set emissions limits without adequately validating, monitoring, or testing its reliability or its trustworthiness in forecasting pollution in the vicinity of these plants, and we order further action to test and validate the model as an adequate forecasting technique for these plants.

BACKGROUND

A. Procedural History

* * *

The Cleveland, Ohio region is a nonattainment area for sulfur dioxide; the region includes areas where the concentration of sulfur dioxide in the ambient air exceeds the national standard. See 40 C.F.R. § 52.1871 (1985); *Ohio v. Ruckelshaus*, 776 F.2d 1333 (6th Cir. 1985). The two major sources whose sulfur dioxide levels are in question in this case, the Eastlake and Avon Lake plants, are electric utility plants owned by the Cleveland Electric Illuminating Company.

In the early 1970s, the state of Ohio developed a state plan setting emissions limits for producers of sulfur dioxide in Ohio. In 1973, EPA's approval of this plan was set aside by the Sixth Circuit because of procedural irregularities, *Buckeye Power Co. v. EPA*, 481 F.2d 162 (6th Cir.1973), and Ohio subsequently withdrew key portions of its plan including the sulfur dioxide emissions limits at the two plants involved in this case. In 1976, because Ohio failed to develop a new plan, EPA promulgated a plan for the state of Ohio as required by § 110(c). In developing this plan, EPA used a computer model called the "Urban RAM model" to predict how sulfur dioxide emitted from the two power plants would be dispersed and would contribute to the pollution level in the atmosphere in the vicinity of the plants. The plan limited the amount of sulfur dioxide that the plants could emit to 1.43 pounds per million BTUs generated by fuel combustion at the Eastlake plant and 1.15 pounds per million BTUs for the Avon Lake plant.

In 1978, the utility company requested that EPA relax the emissions standard on the Eastlake and Avon Lake plants. In support of its request the company submitted studies showing that the Urban RAM model's predictions of sulfur dioxide concentrations in the air were significantly higher than actual empirically tested or monitored concentrations. These "validation studies" convinced EPA that the Urban RAM model overpredicted sulfur dioxide concentrations and that that model was not an appropriate tool for setting emissions limits at the plants. EPA tentatively concluded that the uncontrolled emissions of the plants would not result in a violation of national standards for sulfur dioxide. Consequently, on June 12, 1979 (before the date when the plants were required to comply with the 1976 emissions limits), EPA stayed enforcement of the limits, then proposed under § 110(c) to change the emissions limits to levels equaling the plants' uncontrolled emissions, and asked for public comment.

The responses EPA received cast doubt on EPA's tentative conclusion that the proposed emissions limits would ensure that the region would come into compliance with the national standard. After the comment period had closed on the proposed change, EPA conducted additional modeling on the two plants. This time it used a model known as "CRSTER." On June 24, 1980, based on sulfur dioxide concentration predictions generated by the CRSTER model, EPA set the sulfur dioxide emissions limits at 5.65 pounds per million BTUs for the Eastlake plant and 4.1 or 4.65 pounds—depending on the sulfur content of the oil burned—per million BTUs for the Avon Lake plant.

* * *

B. The CRSTER Model

In "nonattainment areas" the Clean Air Act provides for measuring the amount and the spread of dirty air from a source by actual testing or by "air quality modeling," § 171(2). In such areas, the Act emphasizes the need for "a comprehensive, accurate, current inventory of actual emissions from all sources" in order "to assess the need" for more "reduction" to meet national standards, and presumably as a check on modeling techniques. § 172(b)(4).

An "air quality model" or "computer model" is a forecasting technique. It is a mathematical equation or algorithm expressing a theory and a set of predictions about the content and circulation of air in a limited area, usually less than 50 kilometers in radius. After plugging data in numerical form into the variables of the algorithm, the model uses the mathematical theory to forecast the physical and chemical behavior of pollutants in the air and to describe the way the pollutants will spread out in space and time. Models can be used to predict pollution from a single source, after factoring in an assumption about the amount of background pollution, or they can be used to predict the spread of pollution from each of a

number of sources. The model must be supplied with a “data base” consisting of information about variables such as the capacity of the power plants, the sulfur content of the fuel used, the height and diameter of the smoke stacks, the geographical characteristics of the surrounding terrain, and at least one year’s monitored weather conditions. *See Case, Problems in Judicial Review Arising from the Use of Computer Models and Other Quantitative Methodologies in Environmental Decision Making*, 10 B.C. ENV. AFF. L. REV. 251, 317, 324-25 (1982). In order to be useful, a model must accurately predict the “behavior” of the air system being modeled.

Most of the controversy in the instant case arises from EPA’s use of one such model, known as CRSTER, in setting emissions limits for the two power plants. The CRSTER model is a single source model designed for application to hot, buoyant, stack effluents of the kind commonly produced by power plant and furnace chimneys. After factoring in background pollution, the CRSTER model is actually capable of modeling up to 19 sources, but only if they are in close proximity to one another—multiple stacks at a single plant, for example. It treats all sources being modeled as occupying the same location. *See U.S. EPA 450/2-77-013, User’s Manual for Single-Source (CRSTER) Model*, at 2-24, 2-25 (1977) (hereinafter referred to as the “CRSTER Manual”). The CRSTER model is a “gaussian plume dispersion” model, which means that it describes how a plume of dirty air emerging from a smoke stack will spread upward and outward according to the principles of fluid dynamics.

The model consists of a “preprocessor subroutine,” which translates input data such as meteorological conditions and source characteristics into a format suitable for the model, and a set of subroutines that perform the actual modeling. These subroutines use data translated by the preprocessor to calculate how pollution from the source will spread out in light of the conditions (*e.g.*, wind speed and direction) embodied in that data. In so doing, the model makes a number of simplifying assumptions about such factors as the constancy of wind speed and direction, the uniformity of emission, the inability of the plume to cross a low atmospheric layer called the “mixing level,” the absence of vertical wind shear, the nonreactivity of the effluent, and the degree of diffusion of the plume.

The model’s predictions are presented in the form of readings at a hypothetical network of sensors or monitors surrounding the source. The model provides for five rings of such sensors along 36 compass azimuths evenly spaced every ten degrees. In addition, the model produces outputs of highest and second-highest concentrations at each receptor, a ranking of the 50 highest concentrations for the year, and various other useful data, some of which are suitable for use as input data for other analytic programs.

C. Validation

The user’s manual for the CRSTER model indicates that EPA subjected CRSTER to four validation studies at locations not involved in this case. CRSTER Manual at App. D-F. In an effort to determine the validity and overall accuracy of CRSTER, EPA attempted to validate the model at the Canal power plant, along Cape Code Bay in Massachusetts, and at the Philo, Stuart, and Muskingum plants in southern Ohio.

Based on empirical testing, EPA concluded that CRSTER generally tends during any given year to underestimate the highest and second-highest 24-hour estimated average and the 3-hour estimated average concentrations of sulfur dioxide. With respect to the 1-hour average, the CRSTER model overpredicted as often as it underpredicted. The amount of over- or underprediction varied from plant to plant, but the model is, according to the user’s manual, “generally accurate within a factor of 2,” a 200% deviation from actual fact. The user’s manual states that this “accuracy is widely accepted for such point [*i.e.*, ‘single’] source models.” *Id.*, at D-4.

Several conclusions may be drawn about the CRSTER model on the basis of these four validation studies. First, CRSTER predicted the second-highest 1-hour sulfur dioxide estimated concentrations within a factor of two at two-thirds of the sampling sites. EPA believes that this is an acceptable range of accuracy. Second, CRSTER consistently underpredicted the second-highest 24-hour sulfur dioxide concentrations. Third, plant-specific factors appear to affect the degree to which CRSTER over- or underpredicts sulfur dioxide concentrations. Finally, CRSTER tends to underpredict at greater distances from the pollution source. The four validation tests described here make clear that EPA can validate the CRSTER at a particular site. It appears that on-site validation of CRSTER requires at least one full year of data gathering by EPA.

II. ACCURACY OF THE CRSTER MODEL

Petitioners' primary argument is that EPA has not shown that the new emissions limits, based on predictions generated by the CRSTER model, will ensure attainment of the national air quality standard for sulfur dioxide as required by the Clean Air Act. § 110(a)(2)(B). The main thrust of their argument is an attack on the CRSTER model. They assert that the model's predictions are not accurate reflections of actual pollution concentrations.

The first issue presented is whether EPA has demonstrated the CRSTER model to be sufficiently accurate to be used in setting emissions limits for the plants. In other words, is the CRSTER model accurate enough that EPA's reliance on this model was reasonable rather than arbitrary? § 307(d)(9)(A). We are asked to assess the model's accuracy even though we are limited by a lack of information in the record demonstrating how reliably the model predicts the diffusion of sulfur dioxide in the region around the plants. No on-site study has been performed on the CRSTER model, as was done on the Urban RAM model, comparing the model's predictions of sulfur dioxide concentration for the areas surrounding the plants with actual monitored concentrations in these areas. No one has empirically tested the model or cross-checked its predictions against reality at the locations of the company's power plants.

* * *

EPA's reliance on the CRSTER model without testing the model against any monitored emissions from the plants and ambient air quality data from the area around the plants is arbitrary under these circumstances. The CRSTER model's unimpressive showing in the validation studies conducted at other sites in Ohio and Massachusetts suggests that the model's accuracy is suspect. Moreover, these studies emphasize that site-specific factors, such as local geography and weather conditions, affect the model's accuracy. We have no information in the record about what effect Lake Erie has on the diffusion of sulfur dioxide from these plants built along the shoreline, although all sides appear to agree that this factor is significant. In the absence of reliable data of some type, the trustworthiness of CRSTER predictions cannot be assessed.

In so holding, we recognize that other courts, in some cases, have not required EPA to test model predictions against monitored air quality data. *See, e.g., South Terminal Corp. v. EPA*, 504 F.2d 646 (1st Cir. 1974); *Mision Industrial, Inc. v. EPA*, 547 F.2d 123 (1st Cir. 1976). However, in *South Terminal*, the First Circuit required EPA to demonstrate that its regulation was supported by adequate technical evidence. 504 F.2d at 663-67; *see also Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416 (1971); *Appalachian Power Co. v. EPA*, 477 F.2d 495, 507 (4th Cir. 1973) (agency has discretion in rulemaking, but must "explicate fully" its course of inquiry, analysis and reasoning so that reviewing court can conduct meaningful review). This circuit has favored requirements that EPA back up its

regulations with checks against real world data. See, e.g., *Northern Ohio Lung Association*, 572 F.2d at 1182 (requiring emissions monitoring and correlation of emissions data with air quality data as provided for under § 110(a)(2)(F)).

The problems that complex technical cases such as this one pose for reviewing courts have been widely discussed. See, e.g., Case, *supra*; Yellin, *High Technology and the Courts*, 94 HARV. L. REV. 489 (1981); Merges, *Apple v. Franklin: An Essay on Technology and Judicial Competence*, 2 YALE L. & POL'Y REV. 62 (1983). No matter how sophisticated or involved the methods employed by EPA in reaching its decisions, in order to uphold those decisions under the Clean Air Act we must be able to see that the agency's actions were not arbitrary. In the absence of a record supporting the trustworthiness of agency decision-making tools as they were applied, we cannot uphold those tools' application. EPA has failed to provide such a record.

Furthermore, EPA's own guidelines explicitly recognize the importance of validation using monitored data.

It must be noted that [we] ha[ve] never encouraged the use of air quality models in place of measured data. In fact, EPA encourages the use of measured data in evaluating the effectiveness of control strategies and in determining emission limits. The two should be used in a complementary manner whenever possible. The air quality data can be especially useful in validating air quality models and thus have a direct impact on the air quality assessment.

U.S. EPA, Guideline on Air Quality Models 6 (1978).

Given the CRSTER model's demonstrated sensitivity to site-specific characteristics, EPA's failure to validate CRSTER at the Eastlake and Avon Lake plants in accordance with its own guidelines was arbitrary and capricious.

NOTES

1. EPA has summarized the current models preferred for specific regulatory applications at Appendix A to Appendix W of 40 C.F.R. Part 51 (1996). CRSTER is no longer included on this list, having been superseded by the Industrial Source Complex (ISC) model. See 61 Fed. Reg. 41,839 (1996). Alternative air quality models "that may be considered on a case-by-case basis for individual regulatory applications" are summarized at Appendix B to Appendix W of 40 C.F.R. Part 51 (1996).

2. EPA maintains a "Support Center for Air Quality Modeling (SCRAM)" on the world wide web. [Http://www.epa.gov/scramool/](http://www.epa.gov/scramool/). This site contains detailed information about many of the air quality models recommended by the EPA. User Guides for these models are available on-line.

9 PERMITS AND PERFORMANCE STANDARDS FOR STATIONARY SOURCES

The Clean Air Act Amendments of 1990 radically altered both the permitting requirements and performance standards that apply to stationary sources of air pollution. When fully implemented, these changes will have a profound impact on the way that air pollution from stationary sources is regulated in the United States.

This chapter is divided into five parts. Part one addresses new source performance standards which are established under § 111 of the Act. Part two describes the new permitting requirements contained in Title V of the 1990 Amendments. Thousands of previously unpermitted sources of air pollution will now have to meet stringent permit requirements. Part three concerns the vastly expanded program for regulating hazardous air pollutants under § 112 of the Act. EPA's bubble policy is the subject of Part four. In the fifth part, we address emissions trading programs. Finally, the new Acid Precipitation Program from Title IV of the 1990 Amendments is considered.

A. New Source Performance Standards

NATIONAL ASPHALT PAVEMENT ASSOCIATION V. TRAIN

539 F.2d 775 (D.C. Cir. 1976)

McGOWAN, Circuit Judge:

Section 111 of the Clean Air Act directs the Administrator of the Environmental Protection Agency (EPA) to maintain a list of stationary sources which "may contribute significantly to air pollution which causes or contributes to the endangerment of public health or welfare." *Id.* Within 120 days after the Administrator designates a particular source category as a "significant contributor," he must publish proposed standards of performance for sources within that category. The statute defines a standard of performance as:

[A] standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction) the Administrator determines has been adequately demonstrated.

Id. § 111(a)(1). The Administrator must afford interested parties an opportunity to comment on the proposed standards, and, after considering such comments and making appropriate

modifications, he must promulgate final standards within 90 days after publication of the proposed standards. *Id.* § 111(b)(1)(B).

On June 11, 1973 the Administrator published a notice in the Federal Register indicating that he had amended his list of "significant contributors" to include asphalt concrete plants. 38 Fed. Reg. 15,380. On that same day he also published proposed standards of performance for new or modified asphalt concrete plants. *Id.* at 15,406. After considering written comments on the proposed standards, the Administrator published final standards of performance on March 8, 1974. 39 Fed. Reg. 9307.

The National Asphalt Pavement Association (NAPA) and various asphalt concrete plants then invoked our exclusive review jurisdiction, § 307, filing a petition in this court challenging the action of the Administrator on the following grounds: (1) the Administrator failed to provide interested parties with a meaningful opportunity to comment on the designation of the asphalt concrete industry as a "significant contributor"; (2) the Administrator erred in determining that asphalt concrete plants are "significant contributors" within the meaning of the Act; and (3) there is insufficient evidence in the record (a) to support the Administrator's conclusion that the standards of performance are achievable through the best systems of emission reduction and (b) to show that the Administrator took attendant costs into account. For the reasons set forth below, we affirm the action of the Administrator.

* * *

Petitioners argue that, in determining whether the asphalt cement industry is a "significant contributor", the Administrator relied on a study conducted in 1967 which estimated that in 1967 total particulate emissions from the asphalt concrete industry amounted to 243,000 tons, and that the amount would increase to 403,000 tons in 1977 if the 1967 control level of ninety-five percent were maintained. By the time the Administrator made the designation and promulgated proposed standards, however, a large number of asphalt concrete plants had installed various control devices, especially in response to state and local regulations; according to NAPA, by 1973 virtually every asphalt concrete plant in the United States was equipped with a two stage collection system. NAPA estimates suggest that in 1972 total industry particulate emissions amounted to 40,000 tons, a figure nowhere near as high as the Administrator's estimate based on the 1967 study. Petitioners suggest that the Administrator failed to explain his reliance on the 1967 data, and that his "significant contributor" designation is therefore "arbitrary and capricious."

We see no merit in petitioners' argument. First, the Administrator never relied on the disputed study to estimate the level of *controlled* emissions; to the contrary, the Administrator specifically noted that *one* of the factors he considered was the rate of *uncontrolled* emissions. Moreover, the Administrator also stated that he was aware of and took into account the stringency of existing local and state limitations on emissions from asphalt concrete plants. The Administrator has thus determined that given the number of existing plants, the expected rate of growth in the number of plants, the rate of uncontrolled emissions, and the level of emissions currently tolerated, *potential emissions* from new asphalt concrete plants would contribute "significantly" enough to warrant additional regulation to prevent deterioration of clean air. Petitioners have pointed to nothing in the record that indicates that the Administrator was arbitrary and capricious in reaching that determination.

We also find a fundamental flaw in the contention that once an industry complies with regulations designed to *reduce* air pollution to the level established by national primary and secondary air quality standards, it is no longer a "significant contributor" subject to new source regulation. Compliance with existing regulations may well enable the states to achieve the national standards, but it does not mean that the Administrator is precluded from exercising

regulatory authority to *prevent* deterioration of clean areas. Given the Administrator's statement that he examined current state and local emission limitations, we take his decision to be that construction of new plants subject only to current emission limitations would "significantly contribute" to future air pollution problems. For that reason he promulgated standards of performance that are more stringent than typical state and local regulations, and we can find no basis to upset that determination.

III

We turn next to petitioners' contention that the Administrator acted in an arbitrary and capricious manner in promulgating the following standards of performance for new or modified asphalt concrete plants:

Standard for particulate matter

(a) On and after the date on which the performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall discharge or cause the discharge into the atmosphere from any affected facility any gases which: (1) Contain particulate matter in excess of 90 mg/dscm (0.04 gr/dscf). (2) Exhibit 20 percent opacity, or greater. Where the presence of uncombined water is the only reason for failure to meet the requirements of this paragraph, such failure shall not be a violation of this section.

40 C.F.R. § 60.92.

Those standards were promulgated pursuant to section 111(a)(1) of the Act, which defines a standard of performance as "a standard for emissions of air pollutants which reflects the degree of emission limitation achievable through the application of the best system of emission reduction which (taking into account the cost of achieving such reduction) the Administrator determines has been adequately demonstrated." The components of that definition have been clarified in prior cases in this circuit reviewing standards of performance for other new source categories. We have indicated that "[i]t is the system which must be adequately demonstrated and the standard which must be achievable." *Essex Chemical Corporation v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), *cert. denied*, 416 U.S. 969 (1974). "Adequately demonstrated" does not mean that existing asphalt concrete plants must be capable of meeting the standard; to the contrary, "[s]ection 111 looks toward what may fairly be projected for the regulated future, rather than the state of the art at present. . . ." *Portland Cement Association v. Ruckelshaus*, *supra*, at 391. And an "achievable standard" is one "within the realm of the adequately demonstrated system's efficiency and which, while not at a level that is purely theoretical or experimental, need not necessarily be routinely achieved within the industry prior to its adoption." *Essex Chemical Corporation v. Ruckelshaus*, *supra*, at 433-34. Moreover, the system must be one "which can reasonably be expected to serve the interests of pollution control without becoming exorbitantly costly in an economic or environmental way." *Id.* at 433.

The standard of review of actions of the Administrator in setting standards of performance is an appropriately deferential one, *see Ethyl Corporation v. EPA*, [541 F.2d 1 (D.C. Cir. 1976)] and we are to affirm the action of the Administrator unless it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A) (1970). Since this is one of those "highly technical areas, where our understanding of the import of the evidence is attenuated, our readiness to review evidentiary support for decisions must be correspondingly restrained." *Ethyl Corporation v. EPA*, *supra*, 541 F.2d at 67 (Bazelon, C. J., concurring). "Our 'expertise' is not in setting standards for emission

control, but in determining if the standards as set are the result of reasoned decision-making.” *Essex Chemical Corporation v. Ruckelshaus*, *supra*, at 434.

The Administrator concluded, and petitioners concede, that the best system of emission reduction that has been adequately demonstrated for the asphalt concrete industry is represented by a venturi-scrubber with a twenty-inch pressure drop or a baghouse with an air-to-cloth ratio of six-to-one. Indeed, petitioner Warren Brothers informs us that those control technologies can be installed and operated at reasonable cost, and that various asphalt concrete companies are prepared to install those devices on plants that become subject to the final standards of performance.

Petitioners do not accept, however, the finding of the Secretary that a well-maintained venturi-scrubber with a twenty-inch pressure drop or a well-maintained baghouse with an air-to-cloth ratio of six-to-one will keep emissions at or below 90 mg/dscm (.04 gr/dscf). According to petitioners, the EPA performed tests on only a handful of asphalt concrete plants; that in performing those tests the EPA departed substantially from its prescribed testing procedures; that the Administrator relied on various tests conducted by states and localities which also failed to conform to proper testing procedures; that the Administrator refused to consider the results of tests conducted by NAPA which indicated that the standard could not be achieved on a regular basis; that in interpreting the various test results the Administrator completely overlooked or ignored a number of variables which should have been taken into account (including variations in the size, shape, and smoothness of particles in the feed aggregate, type of fuel, atmospheric conditions, and startup/shut down plant operations); and that the Administrator failed to show that guarantees issued by manufacturers of the relevant control devices supported the established mass emissions limitation.

We have considered these and other objections to the .04 gr/dscf standard promulgated by the Administrator, and, recognizing “the tempered review we exercise in these matters of non-judicial expertise,” *Portland Cement Association v. Train*, 513 F.2d 506, 508 (D.C. Cir. 1975) (after remand), *cert. denied*, 423 U.S. 1025 (1975), we cannot say that the Administrator’s actions are either arbitrary or capricious. On the basis of our evaluation of the record evidence on these issues and the Administrator’s responses thereto, we are unable to say that he did not engage in reasoned decision-making when he set the final performance standard at .04 gr/dscf rather than the originally proposed level of .031 gr/dscf.

We recognize that, for a variety of reasons, the Administrator conducted tests on only four plants. But we think that the record evidence with respect to those tests, and tests conducted by others, including NAPA, preclude us from overturning the action of the Administrator. The four tests conducted by the Administrator had average emission levels of .007, .008, .018, and .031 gr/dscf, all below the final standard of .04 gr/dscf. Two of the tests conducted by NAPA also fell below the final standard; and EPA considered the results of the other two NAPA tests which showed average emission levels of .043 and .108 but concluded that the plants were not well-controlled and should therefore not be used as a basis for determining standards for well-maintained new plants. In addition, the Administrator considered test results submitted by various local and state authorities, which ranged from .010 to .025 gr/dscf, as well as fifty-six other sets of test results submitted after publication of the proposed standards.

Some of these tests admittedly failed to comply strictly with prescribed testing procedures, but we do not think that the departures were substantial enough to warrant reversal. Moreover, we think the record undercuts petitioners’ claim that the Administrator “ignored” or “completely overlooked” relevant factors such as particle size and shape; we think the Administrator’s statements indicate an awareness of and a willingness to adjust for such factors. Given the record before us, we are simply unable to say that the Administrator acted

in an arbitrary and capricious manner in promulgating the less stringent performance standard of .04 gr/dscf (rather than the proposed .031 gr/dscf) after the completion of the rulemaking proceeding. We therefore uphold the .04 gr/dscf mass emissions limitation.

* * *

For all these reasons, the decision of the Administrator is affirmed.

It is so ordered.

NOTES

1. As discussed in the *NAPA* opinion, the EPA Administrator is required to promulgate standards of performance for any category of stationary sources “if, in his judgment, it causes or contributes significantly to air pollution which may reasonably be anticipated to endanger public health or welfare.” § 111(b)(1)(A). Note that the language of § 111 was changed somewhat in the 1977 and 1990 Amendments, after the *NAPA* case was decided, though the basic thrust of the section remains the same. As of 1996, EPA had promulgated NSPS for 76 separate categories of stationary sources. 40 C.F.R. Part 60 (1996).

2. As a general rule, the NSPS are *emission limitations*, although as with asphalt concrete plants they may also contain opacity standards. Further, if the Administrator determines it is not feasible to do otherwise he may impose design, equipment, work practice or operational standards. § 111(h)(1). For example, the NSPS for municipal waste combustors include a requirement that the owner or operator comply with “siting requirements,” and prepare a “materials separation plan” following notice and an opportunity for public review and comment. 40 C.F.R. § 60.57(b).

3. Consider the comparative advantages and disadvantages of design standards and emissions limitations. Emission limitations afford greater flexibility and encourage innovation but pose for the government greater enforcement problems. Why?

4. NSPS also prescribe monitoring, testing, and reporting requirements. 40 C.F.R. part 60 (1996). But they may not prescribe any particular technological system unless it is not feasible to do otherwise. § 111(b)(5).

5. The standards must reflect “the degree of emission reduction achievable through the application of the best system of continuous emission reduction which (taking into consideration the cost of achieving such emissions reduction, any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated [for that category of sources].” § 111(a)(1). In *New York v. Reilly*, 969 F.2d 1147 (D.C. Cir. 1992), the Court of Appeals for the D.C. Circuit described the standard established by § 111(a)(1) as “best demonstrated technology” or “BDT.” To what does the phrase “nonair quality health and environmental impact and energy requirements” refer?

6. Frequently, the NSPS for a particular category are established only for the criteria pollutants; *i.e.*, those to which the NAAQS apply. The statute, however, requires that NSPS be set for any air pollutants which might endanger the public health and welfare. Thus, for example, fluoride, which is not a criteria pollutant, is regulated under the NSPS for primary aluminum reduction plants. 40 C.F.R. § 60.192 (1996). Air pollutants which are neither criteria pollutants nor hazardous pollutants, but which are regulated from categories of

stationary sources, are sometimes referred to as “designated” pollutants. EPA is required to prescribe by which states would set performance standards for existing sources of such “designated” pollutants as well as for new sources. See §§ 111(a)(1)(C); 111(d)(1). In practice, EPA has made little use of §111(d).

7. New source performance standards apply to any stationary sources “the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance . . . applicable to that source.” § 111(a)(2). Several cases have addressed the question of when construction or modification has “commenced” for purposes of this provision. See e.g., *Sierra Pacific Power Co. v. EPA*, 647 F.2d 60 (9th Cir. 1981); *Northern Plains Resources Council v. EPA*, 645 F.2d 1349 (9th Cir. 1981); *United States v. City of Painesville*, 644 F.2d 1186 (6th Cir. 1981). In each of these cases, the agency’s determination that construction had not commenced prior to promulgation of the rules was sustained.

8. A “modification” for purposes of the NSPS program is defined as “any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutants not previously emitted.” § 111(a)(4); see also, 40 C.F.R. §§ 60.2; 60.14 (1996). By regulation, however, EPA has provided that replacement of a substantial portion of an existing facility’s components constitutes “reconstruction” and not “modification.” 40 C.F.R. § 60.15 (1996). A reconstructed facility is subject to the same standards as a new source “irrespective of a change in emission rate.” *Id.* In *United States v. Narragansett Improvement Co.*, 571 F. Supp. 688 (D.R.I. 1983), the court held that EPA’s reconstruction rules could not be applied retroactively.

9. One problem with setting uniform NSPS is that they are virtually impossible to meet during “upset” conditions—periods of start-up, shut down, and malfunction. Under EPA’s rules, these periods are not considered as representative conditions, and emissions in excess of applicable emission limits during such periods are not treated as violations of the NSPS unless otherwise specified in the applicable standards. 40 CFR § 60.8(c) (1996). Nonetheless, operators are required to maintain and operate their facilities “in a manner consistent with good air pollution control practice for minimizing emissions,” during such periods. *Id.* at § 60.11(d). In *Essex Chemical Corporation v. Ruckelshaus*, 486 F.2d 427, 433 (D.C. Cir. 1973), the Court of Appeals for the D.C. Circuit held that some provision for “upset” conditions was necessary “to preserve the reasonableness of the standards as a whole.” But see *National Lime Association v. EPA*, 627 F.2d 416, 434, n.54 (D.C. Cir. 1980) wherein the court suggests that the 1977 Amendments, which require that NSPS be achieved under systems of *continuous* emission control, “[may] have effectively repealed the regulations permitting flexibility to account for startups, shutdowns and malfunctions. . . .”

10. States are permitted to adopt more stringent new source performance standards than are required by the EPA. They may not adopt less stringent standards. § 116.

11. Fossil-fuel-fired stationary sources present a special problem under the Clean Air Act. Eastern and midwestern coal producers have long been concerned that the Act’s SO₂ standards might cause many of their local buyers to shift to lower sulfur western coal. In 1977, they convinced Congress to enact a provision that required the NSPS for fossil fuel fired stationary sources to include a “percentage reduction” in the emissions from such sources. Thus, a new or modified fossil fuel fired source which used low sulfur coal would still be required to reduce its SO₂ emissions (from uncontrolled emissions) by a certain percentage,

no matter how low the sulfur content (and thus, SO₂ emissions) of the coal. This provision was criticized for encouraging the production of high sulfur coal to the environmental and economic detriment of the nation. BRUCE A. ACKERMAN & WILLIAM T. HASSLER, *CLEAN COAL/DIRTY AIR: OR HOW THE CLEAN AIR ACT BECAME A MULTI-BILLION DOLLAR BAIL OUT FOR HIGH SULFUR COAL PRODUCERS AND WHAT SHOULD BE DONE ABOUT IT*. (Yale Univ. Press 1981). The 1990 Amendments repealed the percentage reduction, and new NSPS regulations for power plants were promulgated in mid-1997. 62 Fed. Reg. 36,947 (1997), *to be codified at* 40 C.F.R. subpart D. See Clean Air Act Amendments of 1990, § 407(c).

12. Under § 307(b)(1) of the Act, judicial review of new source performance standards may be obtained only in the Court of Appeals for the District of Columbia Circuit. The scope of review is narrow. Agency action may be turned aside only if found to be arbitrary and capricious, an abuse of discretion or otherwise not in accord with the law. § 307(d)(9). Even under this standard, the decision in the *NAPA* case seems highly deferential. The court does not engage in any detailed discussion of the record before the Agency in upholding the rules. Contrast this approach with two later opinions by Judge Wald of the same court. In *National Lime Association v. EPA*, *supra*, the court struck down EPA's NSPS regulations for lime manufacturing plants, essentially on the grounds that the agency had not demonstrated that the standards were "achievable" within the meaning of § 111. In a 33-page opinion, Judge Wald examines in detail the NLA's arguments before striking down the EPA rules.

13. Even more striking is the court's opinion in *Sierra Club v. Costle*, 657 F.2d 298 (D.C. Cir. 1981). That decision, which concerns the NSPS for fossil-fuel-fired generators, consumes 132 pages in the Federal Reporter before closing with this telling remark:

We reach our decision after interminable record searching (and considerable soul searching). We have read the record with as hard a look as mortal judges can probably give its thousands of pages. We have adopted a simple and straight-forward standard of review, probed the agency's rationale, studied its references (and those of appellants), endeavored to understand them where they were intelligible (parts were simply impenetrable), and on close questions given the agency the benefit of the doubt out of deference for the terrible complexity of its job. We are not engineers, computer modelers, economists or statisticians, although many of the documents in this record require such expertise—and more.

Cases like this highlight the critical responsibilities Congress has entrusted to the courts in proceedings of such length, complexity and disorder. Conflicting interests play fiercely for enormous stakes, advocates are prolific and agile, obfuscation runs high, common sense correspondingly low, the public interest is often obscured.

We cannot redo the agency's job; Congress has told us, at least in proceedings under this Act, that it will not brook reversal for small procedural errors; *Vermont Yankee* reinforces the admonition. So, in the end, we can only make our best effort to understand, to see if the result makes sense, and to assure that nothing unlawful or irrational has taken place. In this case, we have taken a long while to come to a short conclusion: the rule is reasonable.

Affirmed.

Id. at 410.

14. The *National Lime Association* decision, referred to above, offers a refreshingly intelligible description of particulate control technology, which is also at issue in the *NAPA* case:

Baghouses

The baghouse method employs fabric filters ("bags"), situated within an enclosed area (a "house"), to remove particulate from the kiln exhaust gas which is channeled through the house.

As the exhaust gas passes through, a dust cake forms on the filters. The cake itself improves filtration efficiency, but from time to time filters must be cleaned. This is done by forcing a reverse gas flow through the fabric, thus releasing the cake for disposal.

EPA acknowledges that fabric filter effectiveness is primarily a function of kiln exhaust particle size distribution, fabric type, fabric age and maintenance history.

Electrostatic Precipitators

Under this method, "dust particles are charged [by discharge electrodes] and pass through an electrical field [collector plates] of the opposite charge, thus causing the dust to be precipitated out of the exhaust gas . . ." *Portland Cement I*, 486 F.2d at 390. Two basic criteria must be met before an ESP can be utilized: (1) the suspended particle must be able to accept an electric charge; and (2) the particle must then pass through an electric field of sufficient strength to ensure removal of the particulate from the gas stream at the desired efficiency.

Precipitability is a function of the chemical composition of the dust particles, and will vary with the different kinds of material that make up the kiln exhaust dust (limestone, quicklime, fly ash, calcium sulfate, etc.). Assuming precipitability, the two main factors influencing the efficiency of a precipitator are the gas velocity and treatment time. The ESP method experiences a relatively low collection efficiency on submicron particles.

Although most particles collected by an ESP fall by gravity into waiting hoppers, programmed rapping of the electrodes is also required to keep the collector plates and discharge electrodes clean. As with the baghouse method, the dust collected is dry and may be disposed of in a variety of ways. A high level of maintenance skill is needed to keep an ESP in operation at design conditions.

Scrubbers

Scrubbers operate on the principle that wet particles are easier to control than dry. High pressure (or high energy) scrubbers of the type EPA considers capable of meeting the promulgated standards are those which because of their design increase the likelihood of contact between particle and water.

The most common high pressure drop scrubber used for controlling emissions from rotary lime kilns is the venturi scrubber. This scrubber operates by accelerating the velocity of the exhaust gas through a narrow venturi-shaped throat, where it is then brought into contact at great force with a spray of water. The particles thus dampened coalesce to form a slurry that can be then collected by a comparatively simple water gas separation device. The separated gas is then released into the atmosphere.

The efficiency of particulate removal is a direct function of energy input, measured by pressure drop across the venturi throat. Gaswater contact in the venturi scrubber is so thorough that even submicron particles are removed.

Although low pressure drop scrubbers use less energy than high pressure drop scrubbers, even a low efficiency scrubber requires more energy than either the baghouse or the ESP. The slurry which is the byproduct of scrubber use is deposited in ponds, where the collected particulates settles out from the scrubbing water. The “clean” scrubbing water is then reused. Under present law settling ponds must be located so that they do not receive excessive rainwater runoff, causing overflow into local navigable waters.

627 F.2d at 424-25.

15. The NSPS, while subject to periodic review, are normally expressed as fixed standards which apply in the same manner to all sources within the category or class of facility. This distinguishes them from the new source control requirements imposed as part of the new source review and permitting in PSD and nonattainment areas. The Best Available Control Technology (BACT) and Lowest Achievable Emission Rate (LAER) requirements are variable. They are set on a case-by-case basis, depending on circumstances and changing technology. The BACT and LAER standards must be at least as stringent as NSPS. In practice, however, BACT and LAER are often identical to the NSPS for affected source categories.

16. The 1990 Amendments directed the EPA to promulgate NSPS for source categories that had been listed under § 111, but for which no standards had been set. *See* § 111(f). The EPA was required to promulgate standards for one-fourth of these categories by November, 1992; one-half by November, 1994, and the remaining sources by November, 1996. *Id.* What remedy is available if the EPA misses the deadlines set in § 111(f)?

17. Section 129(a)(1) of the Clean Air Act requires the EPA to establish NSPS for solid waste incineration units for various categories of such units including those with capacity greater than 250 tons per day.

B. New Source Review

The general requirements for nonattainment and PSD areas have been addressed previously in Chapters Six and Seven. This section focuses more specifically on the new source review (NSR) program, which describes the preconstruction review and permitting requirements for major stationary sources and major emitting facilities in PSD and nonattainment areas.

Detailed regulations implementing the NSR program are set out at 40 C.F.R. part 51, subpart I (§§ 51.160-166), and 40 C.F.R. §§ 52.21-24 (1996). In 1996, EPA proposed major revisions to those rules. 61 Fed. Reg. 38,250 (1996). Those rules had not become final at the time of this writing. One key issue that now appears to be largely resolved, however, concerns the application of new source review to *modifications* of existing sources. In particular, the emissions “thresholds” and facility changes which trigger new source review for PSD and nonattainment areas, as well as for New Source Performance Standards and Title V permitting requirements (including those applicable to air toxics under section 112), have been controversial and heavily litigated.

The *WEPCO* decision, excerpted below, caused the EPA to change its new source permitting rules. One change directly emerging from *WEPCO* is an exclusion of electric

power plants from new source review when they are engaged in pollution control projects. *See* 57 Fed. Reg. 32,314 (1992). Other cases challenging EPA's determination of what constitutes a "modification" for purposes of triggering new source review are discussed in the notes following the principal case.

WISCONSIN ELECTRIC POWER COMPANY V. REILLY

893 F.2d 901 (7th Cir. 1990)

CUDAHY, Circuit Judge.

The Petitioner, Wisconsin Electric Power Company ("WEPCO"), challenges two final determinations issued by the Environmental Protection Agency (the "EPA"). In these determinations, the EPA concluded that WEPCO's proposed renovations to its Port Washington power plant would subject the plant to certain pollution control provisions of the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. (1982). We affirm in part, vacate in part and remand to the EPA.

I. THE UNDERLYING DISPUTE

A. *Relevant Provisions of the Clean Air Act*

* * *

In section 111 of the 1970 Amendments, Congress required the EPA to promulgate New Source Performance Standards ("NSPS") in order to regulate the emission of air pollutants from new sources. These standards addressed hourly rates of emission and, in addition to new sources, applied to modifications of existing facilities that created new or increased pollution. Indeed, section 111(a)(2) of the Act stated that NSPS would apply to

any stationary source, the construction or *modification* of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source.

(Emphasis supplied). Congress then defined "modification" as

any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.

§ 111(a)(4) (emphasis supplied).

Subsequently, faced with only varying degrees of success in controlling pollution in different parts of the country, Congress enacted the Clean Air Act Amendments of 1977, (*codified at* 42 U.S.C. §§ 7401-7642 (1982)). Congress revised the NSPS so that regulated sources of pollution would have to use "the best system of continuous emission reduction which (taking into consideration the costs of achieving such emission reduction, and any nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated. . . ." § 111(a)(1)(C). In addition, Congress added a program for the Prevention of Significant Deterioration ("PSD"), concerned with increases in total annual emissions, to ensure that operators of regulated sources in relatively unpolluted areas would not allow a decline of air quality to the minimum level permitted by NAAQS. Air quality is preserved in this program by requiring sources to limit their emissions

to a “baseline rate”; regulated owners or operators in areas that have attained NAAQS must obtain a permit before constructing or modifying facilities. § 165(a)(1). Congress also essentially adopted its NSPS definition of “modification” for the PSD program. § 169(2)(C).

From this statutory framework, the EPA promulgated regulations for both the NSPS and PSD programs. In this case, its regulations concerning modifications are central. The EPA defines “modification” in substantially the same terms used by Congress:

[A]ny physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act.

40 C.F.R. § 60.14(a) (1988). To determine whether a physical change constitutes a modification for purposes of NSPS, the EPA must determine whether the change increases the facility’s hourly rate of emission. 40 C.F.R. § 60.14 (1988). For PSD purposes, current EPA regulations provide that an increase in the total amount of emissions activates the modification provisions of the regulations. 40 C.F.R. § 52.21(b)(3) (1988).

Even at first blush, the potential reach of these modification provisions is apparent: the most trivial activities—the replacement of leaky pipes, for example—may trigger the modification provisions if the change results in an increase in the emissions of a facility. As a result, the EPA promulgated specific exceptions to the modification provisions:

The following shall not, by themselves, be considered modifications under this part:

- (1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category . . .
- (2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
- (3) An increase in the hours of operation. . . .

40 C.F.R. § 60.14(e) (1988) (NSPS program); *see* 40 C.F.R. § 52.21(b)(2)(iii) (1988) (PSD program). These regulations (and the statutes from which they derive) are the focal point of this case.

B. WEPCO’s Proposed Life-Extension Project

WEPCO’s Port Washington electric power plant is located on Lake Michigan north of Milwaukee, Wisconsin. The plant consists of five coal-fired steam generating units that were placed in operation between 1935 and 1950. Each generating unit has a design capacity of 80 megawatts, but the recent performance of some of the units has declined due to age-related deterioration of the physical plant.

WEPCO and its consultant, Bechtel Eastern Power Corporation, conducted a Plant Availability Study in 1983 to examine and assess the condition of the power plant. As a result of the Study, WEPCO concluded “that *extensive renovation* of the five units and the plant common facilities is needed if operation of the plant is to be continued.” [Citation omitted.] (Emphasis supplied). The Study noted that the air heaters on the first four units had deteriorated severely, while the rear steam drums in units 2 through 5 had experienced serious cracking. Air heater deterioration prevented units 1 and 4 from operating at full capacity, while the potential for steam drum blowout required a reduction in pressure (and output) in units 2 and 3. The possibility of catastrophic failure (steam drum blowout) in unit 5 was so great that WEPCO shut down the unit completely.

As a result of this Study, WEPCO submitted a proposed replacement program (which it termed a "life extension" project) to the Wisconsin Public Service Commission for its approval, as required by state law. Wis. Stat. § 196.49 (1987). WEPCO explained in its proposal that "[r]enovation is necessary to allow the Port Washington units to operate beyond their currently planned retirement dates of 1992 (units 1 and 2) and 1999 (units 3, 4 and 5) . . . [and that renovation would render the plant] capable of generating at its designed capability until year 2010. . . ." [Citation omitted.] Among the renovations required were repair and replacement of the turbine-generators, boilers, mechanical and electrical auxiliaries and the common plant support facilities. After preliminary review of the program, the Public Service Commission consulted the Wisconsin Department of Natural Resources (which then consulted EPA Region V) to determine whether WEPCO needed to obtain a PSD permit before commencing the repair and replacement program. David Kee, the Director of EPA Region V's Air and Radiation Division, then referred the matter to EPA Headquarters. See, e.g., 40 C.F.R. § 60.5 (1988) (discussing the EPA's procedures regarding determinations of construction or modification).

EPA staff members conferred with WEPCO representatives between March and September 1988 to gain additional information regarding the proposed repair and replacement project. On September 9, 1988, EPA Acting Assistant Administrator Don R. Clay issued a memorandum in which he preliminarily concluded that the project would subject the plant to both NSPS and PSD requirements. Memorandum from Don R. Clay, Acting Assistant Administrator for Air and Radiation of the EPA, to David A. Kee, Director of Air and Radiation Division, Region V (Sept. 9, 1988) [Clay Memorandum]. The Clay Memorandum pointed out that the project would constitute a "physical change" resulting in an increase of production and emissions, which would therefore subject the plant to the relevant strictures of the Clean Air Act. *Id.* at 3-4. Further, the Clay Memorandum dismissed WEPCO's contention that the program was routine and was therefore exempt from the requirements of NSPS and PSD. This conclusion was adopted *in toto* by EPA Administrator Lee M. Thomas. Letter from Lee M. Thomas, Administrator of the EPA, to John Boston, Vice President of WEPCO (Oct. 14, 1988) [Thomas Letter].

Following the Thomas Letter, WEPCO continued to conduct capacity tests on the units. Based upon these tests, Assistant Administrator Clay issued a "revised final determination" that generally affirmed the EPA's earlier findings, but modified the baseline figures used by the EPA for units 2 and 3. Letter from Don R. Clay, Acting Assistant Administrator for Air and Radiation of the EPA, to John W. Boston, Vice President of WEPCO (Feb. 15, 1989) [Supplemental Determination].

Alleging that the EPA has misconstrued both the Clean Air Act and its own regulations, WEPCO appeals the EPA's final determination. We have jurisdiction to hear this appeal pursuant to § 307(b).

III. LIKE-KIND REPLACEMENT AND MODIFICATION UNDER THE ACT

A. The Underlying Statutory Framework

* * *

1. Physical Change

Certainly, under the plain terms of the Act, WEPCO's replacement program constitutes a "physical change." WEPCO proposes to replace rear steam drums on units 2, 3, 4 and 5; each of these steam drums measures 60 feet in length, 50.5 inches in diameter and 5.25 inches in thickness. Clay Memorandum at 4. In addition, WEPCO plans to replace another major component, the air heaters, in units 1-4. To implement this four-year program, WEPCO will

need to make the replacements by taking the units successively out of service for nine-month periods. *Id.* These steps clearly amount to a “physical change” in the Port Washington plant.

* * *

WEPCO does not dispute that its steam drum and air heater replacements will result in an altered plant. But WEPCO does assert that Congress did not intend for simple equipment replacement to constitute a physical change for purposes of the Clean Air Act’s modification provisions: The plain meaning of “modify” is “to change or alter” [Webster’s New World Dictionary] or “to make basic or fundamental changes in” [Webster’s Ninth New Collegiate Dictionary.] Reflecting the plain meaning of this term, Congress provided that a facility (1) must undergo a physical or operational “change” before it is evaluated under the modification provision. . . . Thus, under the plain meaning of the Act, a unit should not be deemed “modified” as a result of replacement of equipment with equipment similar to that replaced. As in the case of Port Washington, such like-kind replacement does not “change or alter” the design or nature of the facility. Rather, it merely allows the facility to operate again as it had before the specific equipment deteriorated.

Chevron instructs us to rely more on congressional direction and on agency construction (pursuant to congressional delegation) than on glosses found in the dictionary. What WEPCO calls “plain” is anything but plain and takes the definition far beyond the words enacted by Congress. *Chevron*, 467 U.S. at 843-45. [Citation omitted.] Thus, whether the replacement of air heaters and steam drums is a “*basic or fundamental change*” in the Port Washington plant is irrelevant for our purposes, given Congress’s directions on the subject: “The term ‘modification’ means *any* physical change. . . .” § 111(a)(4) (emphasis supplied). We follow Congress’s definition of “modification”—not Webster’s—when interpreting this term within the context of the Clean Air Act.

* * *

2. *Increase in Emissions*

The controversy involving WEPCO’s alleged increase in emissions primarily concerns the regulations, not the statute: WEPCO argues that the EPA’s *regulatory* method of measuring emissions is arbitrary and capricious. From a statutory standpoint, however, the modification provisions of the Clean Air Act Amendments are activated once a physical change is coupled with an “increase [in] the amount of any air pollutant emitted.” § 111(a)(4). *See, e.g., United States v. Narragansett Improvement Co.*, 571 F. Supp. at 694. In the case before us, WEPCO does not dispute that its replacement program—intended to enable its deteriorated generators to operate at full capacity—will cause its emissions to increase from their current operating levels. The question for resolution, however, is whether the EPA properly construed its regulations by comparing actual emission rates with so-called “baseline” rates to determine the increase in emissions for NSPS and PSD purposes. We will discuss this subject later; but for purposes of the statutory requirement, we simply observe that the rejuvenated Port Washington plant will produce more emissions after the completion of the renovation project than the operating deteriorated plant produced shortly before the project was undertaken.

B. The EPA’s Regulations

Although we have determined that WEPCO’s repair and replacement program satisfies the modification provisions of the Clean Air Act Amendments, this is not the end of our inquiry. WEPCO’s attack focuses primarily on EPA regulations, which in a number of

respects are narrower than the statute. WEPCO argues that the EPA applied its regulations arbitrarily and capriciously to the Port Washington project.

1. *Physical Change and the "Routine" Exception*

EPA regulations define "modification" as "any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies." 40 C.F.R. § 60.14(a) (1988). To a major degree, this definition parallels § 111(a)(2), and it is unnecessary to repeat the analysis already applied to the statute. *See supra* 111(a)(1). However, the EPA has, in addition, used its regulations to exempt a number of activities from the broader definition. The exemption that may be relevant here is accomplished by the following language:

The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category. . . .

40 C.F.R. § 60.14(e) (1988). *See* 40 C.F.R. § 52.21(b)(2)(iii). WEPCO relies on this language to argue that, even if its repair and replacement program amounts to a physical change, it was specifically exempted by the regulations.

Again, we accord substantial deference to an agency's interpretation of its own regulations, especially with respect to technical and complex matters. *Lyng v. Payne*, 476 U.S. 926, 939 (1986); *Aluminum Co. of Am. v. Central Lincoln Peoples' Util. Dist.*, 467 U.S. 380, 390 (1984). In this connection, to determine whether proposed work at a facility is routine, "EPA makes a case-by-case determination by weighing the nature, extent, purpose, frequency, and cost of the work, as well as other relevant factors, to arrive at a common-sense finding." Clay Memorandum at 3. The EPA considered all these factors in determining that the Port Washington project was not routine; first, the EPA observed that the nature and extent of the project was substantial: WEPCO proposed to replace sixty-foot steam drums (in units 2, 3, 4 and 5) and air heaters (in units 1, 2, 3 and 4) during successive nine-month outages at each unit. *Id.* at 4. Certainly, the magnitude of the project (as well as the down-time required to implement it) suggests that it is more than routine.

* * *

2. *Increase in Emissions*

Thus far, we have not had to address the important differences between the PSD and NSPS programs. At this point, however, the differences become crucial, because each program measures emissions in a fundamentally distinct manner.

a. *NSPS Measurements*

As previously noted, the EPA's NSPS program is concerned primarily with increases in emission rates, expressed in kilograms per hour of discharged pollutants. 40 C.F.R. § 60.14 (1988). The EPA compares the hourly emissions of the unit at its current maximum capacity to its potential emissions at maximum capacity after the change. Clay Memorandum at 9; *see* 40 C.F.R. § 60 App. C (1988) (providing complex formulae for determining emission rate change). In this calculation, the agency disregards the unit's maximum *design* capacity; this factor often sheds little light on the unit's *actual current* capacity to produce emissions.

The EPA applied these procedures in examining the generating units at Port Washington. The EPA asked WEPCO to submit figures for the actual operations and emissions of each unit

at the Port Washington plant for the years 1978 to 1987; the EPA then relied upon the 1987 figures to calculate the emissions baseline against which post-replacement emissions could be compared. WEPCO, however, challenged the EPA's acceptance of these preliminary baseline figures, arguing that units 1, 2, 3 and 4 were capable of operating at higher rates of production than those calculated by the EPA based upon the 1987 figures. WEPCO conducted five ten-hour tests at each unit to determine its maximum capacity. Upon reviewing the test results, the EPA agreed that units 2 and 3 could be operated at their design capacities, and it revised the baseline levels for these units. The agency concluded that because there would be no increase in production or emissions, NSPS would not apply to these units following the renovation project. Nonetheless, the EPA refused to alter the baseline levels for units 1 and 4, noting that WEPCO's tests had not been conducted pursuant to the test protocol as required by the regulations and the Wisconsin State Implementation Plan (units 1 and 4 exceeded certain maximum allowable emission limits). Comparing these 1987 baseline levels to the maximum capacity of the plant after renovation, the EPA concluded that the renovation project would be subject to the provisions of NSPS.

WEPCO asks us to overturn the EPA's final ruling that the Port Washington project triggers NSPS. Specifically, WEPCO argues that, by using 1987 figures in determining the emissions baseline, the EPA failed to apply its own regulations: WEPCO asserts that these figures "reflected voluntary decisions by WEPC[O] regarding safety considerations (e.g., the 'zero' rate for Unit 5) and an electricity demand which did not require operation of the units at higher capacities." WEPCO also posits that the EPA's refusal to compare representative pre-renovation emissions with actual post-renovation emissions is contrary to EPA regulations and amounts to an abuse of agency discretion. [The court finds that EPA properly applied its rules regarding modifications for purposes of the NSPS program, to WEPCO's facility.]

b. PSD Measurements

Unlike NSPS, PSD is concerned with changes in total annual emissions, expressed in tons per year. The PSD regulations require preconstruction review of the construction or modification of major emitting facilities. These regulations define their key term—"major modification"—as "any physical change in or change in the method of operation of a major stationary source that would result in a significant¹⁰ net emissions increase of any pollutant subject to regulation under the Act." 40 C.F.R. § 52.21(b)(2)(i) (1988).

Here the question is whether WEPCO's renovation project will result in "a significant net emissions increase" so as to trigger the "major modification" provision of the regulations and, as a result, PSD. To determine whether the project would result in an emissions increase, the EPA compared actual pre-renovation emissions with potential post-renovation emissions at the Port Washington plant. Specifically, the EPA first examined the two-year period of 1983 through 1984 as the pre-renovation baseline period, pursuant to 40 C.F.R. section 52.21(b)(21)(ii):

In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. The Administrator shall allow the use of a different time period

¹⁰ The regulations define "significant" in terms of threshold emissions increases of individual pollutants: for example, an increase of 40 tons per year of nitrogen oxides is a "significant" net emissions increase. See 40 C.F.R. § 52.21(b)(23) (1988).

upon a determination that it is more representative of normal source operation. Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the selected time period.

40 C.F.R. § 52.21(b)(21)(ii) (1988) (emphasis supplied). Because Administrator Thomas determined that the discovery of cracks in the rear steam drums led to a more recent "source curtailment," he relied upon the data from earlier years, 1983 and 1984, as the baseline to determine whether the renovation would cause an increase in emissions. WEPCO does not challenge this component of the EPA's calculation.

Second, the EPA calculated the actual emissions of the plant *following* completion of the project. Generally, in order to apply PSD, the regulations require the EPA to find an "increase in *actual emissions* from a particular physical change or change in method of operation." 40 C.F.R. § 52.21(b)(3)(i)(a) (1988) (emphasis supplied). The EPA reasoned, however, that because the source "ha[d] not yet begun operations following the renovation, 'actual emissions' following the renovation [were] deemed to be the source's 'potential to emit.'" Clay Memorandum at 7. In support of its reliance on WEPCO's potential to emit, the EPA pointed to the regulations: "For any emissions unit which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date." 40 C.F.R. § 52.21(b)(21)(iv) (1988).

WEPCO objects strenuously, and with good reason. In calculating the plant's post-renovation potential to emit, the EPA bases its figures on round-the-clock operations (24 hours per day, 365 days per year) because WEPCO *could potentially* operate its facility continuously, despite the fact that WEPCO has never done so in the past. And the EPA has admitted that it "assumed that emissions increases at Port Washington would come not from an increase in emission rate, but rather from increases in production rate or hours of operation." See Clay Memorandum at 7-8. The EPA responds that WEPCO can avoid these maximum calculations simply by consenting to federally enforceable restrictions on production rates and hours of operation, but WEPCO declines to do so. Clay Memorandum at 8; see 40 C.F.R. §§ 52.21(b)(4), 52.21(b)(16) (1988). Thus, argues the EPA, it has no choice but to assume that the plant will be operated continuously.

The first issue to be addressed is whether the EPA properly invoked the "potential to emit" concept in calculating the emissions increase. As explained above, the PSD regulations state that the EPA may rely upon a facility's potential to emit if the unit "has not *begun normal operations* on the particular date." 40 C.F.R. § 52.21(b)(21)(iv) (1988) (emphasis supplied). WEPCO argues that this phrase should be interpreted to include only those units that have never been in operation, while the EPA urges that the phrase can be applied to both new and modified units.

The regulatory history of this phrase sheds little light on its proper interpretation. The EPA argues that it has always interpreted this phrase to include modified units; it asserts that its formulae for determining emissions increases have consistently assumed that "new or *modified units*" would be deemed to operate at maximum physical or federally enforceable levels. 45 Fed. Reg. 52,676, 52,718 (1980) (emphasis supplied). But the EPA's analysis here seems circular: in order to demonstrate that the Port Washington like-kind replacement project constitutes a modification, the EPA applies the potential to emit concept (to show an increase in emissions). And in order to apply the potential to emit concept to like-kind replacement, the EPA assumes that the plant is a "modified" unit. Although we accord great deference to an agency construing the statute it administers, *Chevron*, 467 U.S. at 844, and even more deference to an agency interpreting its own complex regulations, *Aluminum Co. of Am. v.*

Central Lincoln Peoples' Util. Dist., 467 U.S. at 390, we cannot defer to agency interpretations that, as applied here, appear to assume what they seek to prove.

We are also troubled by the EPA's assumption of continuous operations in calculating potential to emit at the Port Washington plant. Although we agree that the EPA cannot reasonably rely on a utility's own unenforceable estimates of its annual emissions, we find no support in the regulations for the EPA's decision wholly to disregard past operating conditions at the plant. Indeed, *Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979), which contributes importantly to the EPA's current PSD program, suggests otherwise. There, the D.C. Circuit held, in part, that the EPA must "take[] into account the anticipated functioning of the air pollution control equipment designed into the facility" when calculating the facility's potential to emit. *Id.* at 353. More important for our purposes, however, was the court's discussion of a unit's potential to emit:

If the source has no actual emissions because it has yet to commence operating, its hypothetical, projected emissions are included in the baseline. *If, however, the source is an established operation, a more realistic assessment of its impact on ambient air quality levels is possible, and thus is directed.*

Id. at 379 (emphasis supplied). The district court in *United States v. Louisiana-Pacific Corp.*, 682 F. Supp. 1141 (D. Colo. 1988), relying on *Alabama Power*, recently reached the same conclusion:

The broad holding of *Alabama Power* is that potential to emit does not refer to the maximum emissions that can be generated by a source hypothesizing the worst conceivable operation. Rather, the concept contemplates the maximum emissions that can be generated while operating the source as it is intended to be operated and as it is normally operated. Of course, it is possible that a source could be operated without the control equipment designed into it or that a Kerosene heater could be operated so badly that the fire would go out. Yet, *Alabama Power* stands for the proposition that hypothesizing the worst possible emissions from the worst possible operation is the wrong way to calculate potential to emit.

Id. at 1158.

In sum, we certainly do not suggest that the EPA may never subject replaced units to the potential to emit concept under its regulations. The EPA may, if it wishes, undertake notice and comment procedures to apply the potential to emit concept to like-kind replacement. *See* § 307(d). But existing regulations do not seem to us to support such an application. We therefore believe that the EPA's reliance on an assumed continuous operation as a basis for finding an emissions increase is not properly supported. The EPA's determination that there has been a major modification for PSD purposes must be set aside.

* * *

V. CONCLUSION

In an era of increasing environmental concern, Congress enacted the Clean Air Act to "speed up, expand, and intensify the war against air pollution in the United States with a view to assuring that the air we breathe throughout the Nation is wholesome once again." H.R. Rep. No. 1146, 91st Cong., 2d Sess. 1, 1, 1970 U.S. Code Cong. & Admin. News 5356, 5356. The EPA is entitled to substantial deference in interpreting the technical provisions of the Act and its own regulations. We cannot grant deference, however, where the EPA has attempted to implement the Act's lofty goals in contravention of its own statutory regime. We therefore

affirm in part and vacate in part, remanding the cause to the EPA for further proceedings not inconsistent with this opinion.

NOTES

1. The NSPS program and the NSR program use different approaches in determining what constitutes a modification. How do these approaches differ as explained in the *WEPCO* case? See also, 56 Fed. Reg. 2760 (1991). Compare § 111(a)(4) with § 171(4). Are these different approaches justified under the language of the Act? Note that Part C of the Act, relating to the PSD program, does not contain a separate definition of modification. In the 1990 Amendments, however, Congress amended § 167 to provide for enforcement against the construction or modification of any major emitting facility which does not conform to the requirements of this part” The final *WEPCO* rules allow an electric utility to avoid meeting NSPS requirements for physical or operational changes that do not increase the maximum hourly emissions at any time during the five year period prior to the change. 40 C.F.R. § 60.14(h) (1996).

2. In *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292 (1st Cir. 1989), the owner of a cement plant sought to convert one of its “wet” kilns to a “dry” kiln, and to combine that kiln with another kiln. The old kilns operated at only 60% of their capacity. In deciding whether this change should be treated as a modification for purposes of the PSD program, EPA compared the annual emissions from the two kilns operating at 60% capacity, with the single new kiln operated at full capacity. While the new kiln was cleaner and more efficient it nonetheless was capable of emitting significantly more pollutants. In light of the *WEPCO* decision, how should the court rule? Can the cases be distinguished?

3. The *WEPCO* rules adopt an “actual to actual test on all physical or operational changes at electric utility steam generating units save those that are an addition of a new unit or constitute a replacement of an existing unit.” 57 Fed. Reg. 32,317 (1996), codified at 40 C.F.R. §§ 51.166(b)(21)(v); 52.21(b)(21)(v); 52.24(f)(13)(v) (1996). For non-electric utility steam generating units, however, EPA continues to use an “actual to potential” test. See 40 C.F.R. §§ 51.166(b)(21)(iv); 52.21(b)(21)(iv); 52.24(f)(13)(iv) (1996).

4. Several courts have rejected EPA’s position that state and local emission control requirements that are not federally enforceable, cannot be used to determine the “potential to emit” (PTE) for a source in deciding whether that source will exceed the emissions threshold required for regulation. *Clean Air Implementation Project v. EPA*, No. 92-1303 (D.C. Cir. June 28, 1996) (PTE under Title V); *Chemical Mfg. Assn. v. EPA*, 70 F.3d 637 (D.C. Cir. 1995) (PTE under PSD and new source review); *National Mining Assoc. v. EPA*, 59 F.3d 1341 (D.C. Cir. 1995) (PTE for “major sources” under § 112). In response to these decisions, the EPA has issued an “Interim Policy on Federal Enforceability Requirement for Limitations on Potential to Emit”, (January, 1996). [Http://www.epa.gov/ttncaaa1/title5/pte122.pdf](http://www.epa.gov/ttncaaa1/title5/pte122.pdf). The interim policy was prepared pending the promulgation of regulations that will address the PTE issue. The policy defines “potential to emit” to mean “federally enforceable or legally and practicably enforceable by a state or local air pollution control agency.” EPA intends to publish final PTE rules by mid-1988. See 61 Fed. Reg. 68,383, 68,388 (1996). Why might EPA be worried about the effectiveness of local or state controls? On what basis can states impose stricter stationary source controls than are required by the federal Clean Air Act? See § 116.

5. EPA's proposed NSR rules have been criticized for requiring states to provide for judicial review of NSR permit terms and conditions only in state courts. Federal court review would not be allowed. Eliza A. Dolin & Ellen L.W. Proctor, *Exclusive State Court Review for NSR Permit Terms and Conditions: Does EPA's Proposal Go Too Far?*, 27 ENV'T L. REP. 10057 (1997). EPA's efforts to limit NSR review to state courts, however, may be circumscribed by Title V of the Act. Under § 505(b)(2), any person may petition EPA to object to issuance of a permit, and the denial of a petition is reviewable in the appropriate federal court of appeals with § 307.

C. The Permit Program for Stationary Sources

PERMITTING AND ENFORCEMENT UNDER THE CLEAN AIR ACT AMENDMENTS OF 1990

Stephen E. Roady, 21 ENV'T L. REV. 10,178 (News & Analysis)(April, 1991)

To understand why the Clean Air Act Amendments of 1990 contain a permits title, it is necessary to begin with the rationale advanced when the Administration bill was presented to the Congress in July 1989. Most fundamentally, the drafters of the permits title at EPA had concluded after a number of years of experience under the Clean Air Act that air pollution would be more efficiently regulated if sources were required to comply with permits as a condition of operations. They believed that it would be easier for sources to understand their obligations under the Act if those obligations were collected in one document—a permit. They also were convinced that it would be easier for the government to enforce the requirements of the Act if the government could rely on permit conditions as a benchmark against which to judge performance. In addition, they believed that the existing mechanism for regulating air pollution, the state implementation plan (SIP) process, was too cumbersome. Although the SIP process was perceived as a useful planning device, permits were viewed as the better way to enforce Clean Air Act requirements against specific sources. Finally, some believed that permits could serve other useful functions, such as acting as a convenient reference point in calculating allowable emissions for trading purposes under the acid rain title of the Amendments.

* * *

The permits title establishes the generic permit program that will prove essential to the proper functioning of the permit system under the Act. Significantly, however, specific kinds of sources must also look to other portions of the Amendments to find additional permit requirements applicable to their operations. Thus, separate permit requirements relevant to construction of new sources remain in the Act at §§ 165, 172, and 173. In addition, new permit requirements relevant to hazardous air pollutants appear in new § 112(j). Finally, separate permit requirements relevant to sources regulated under the acid rain title are set out in § 408 of the new Act. Those framing the final language in each case endeavored to coordinate the various permit requirements and timetables, and the results of those efforts will be noted in this Article. A snapshot of the permit title as enacted is provided below. Important details of the title are addressed in succeeding sections of this Article.

□ **Section 501: Definitions.** Section 501 defines certain key terms. The term “affected source” is defined by reference to title IV of the new law, which states that all sources regulated under that title (the acid rain title) shall be deemed “affected sources.”

Section 501 defines “major source” by reference to § 112 of the Act, and also by reference to § 302 and to part D of title I (the nonattainment part). In addition, § 501 defines “schedule of compliance” (an important term that resurfaces in § 503 as an item that must be submitted along with the permit application) as a schedule of remedial measures leading to compliance with the Act. Finally, § 501 defines “permitting authority” as either the Administrator of EPA “or the air pollution control agency authorized by the Administrator to carry out a permit program under this title.”

□ **Section 502: Permit Programs.** Section 502(a) states the basic premises of the title: that after the effective date of any approved permit program, it shall be unlawful for a source subject to the title to operate without a permit, or to violate any requirement of permit. Sources subject to the title are listed in this section. In addition to major sources, these include “affected sources” as provided in title IV, any source “subject to standards or regulations under section 111 or 112,” and any source required to have a permit under parts C or D of title I. The Administrator is granted authority to expand the number of sources covered, and also to exempt sources (other than major sources) from the requirement to obtain a permit.

Section 502(b) requires the Administrator to promulgate regulations establishing the minimum elements of permitting programs to be administered by permitting authorities, and to do so within 12 months following enactment of the Amendments. In addition, this section enumerates in some detail what it is that the Administrator must include in these minimum elements. The list includes provisions for the collection of fees, ensuring compliance with permits, public notice and expeditious processing of permit applications, public availability of certain permit documents, permit revisions if new requirements become applicable to a permitted source, and operational flexibility without the need for permit modifications under certain conditions.

The balance of § 502 provides, *inter alia*, that: (1) “a single permit may be issued for a facility with multiple sources”; (2) states must submit approvable permit programs to EPA within three years following enactment of the Amendments (the states were given three years because of a concern that many states might need to obtain legislative authority to be able to satisfy all the “minimum elements” necessary for EPA approval); (3) EPA must approve state programs within one year after they are submitted (or, assuming the states consume their full three years, sometime in 1994); (4) if EPA does not initially approve a state program, the state is allowed six months to revise and resubmit the program; (5) EPA will finally approve or disapprove the state program—or will establish, administer, and enforce a federal program for that state—by the end of 1995; (6) EPA may impose sanctions on states for failing to submit approvable programs and for failing to administer and enforce programs adequately; and (7) EPA may, by rule, grant “interim approval” to a state program on a one-time basis for a two-year term when the program “substantially meets the requirements of this title, but is not fully approvable.”

□ **Section 503: Permit Applications.** Section 503 requires sources to file their applications for an operating permit within one year after they become subject to a permit program. This section also provides that, “[e]xcept for sources required to have a permit before construction or modification under the applicable requirements of this Act,” the filing of a complete application in a timely fashion will protect the source from any allegation that it is operating without the required permit during the time the application is pending. Permitting authorities are allowed up to three years to act on applications that are submitted within the first year after

a program becomes effective. Otherwise, they are required to take final action to approve or disapprove—and issue or deny—permits within 18 months after receipt of the permit application.

□ **Section 504: Permit Requirements and Conditions.** Section 504 sets out the required contents of each permit. These include: enforceable emission limitations and standards, a “schedule of compliance,” a requirement to report the results of required monitoring no less often than every six months, and “such other conditions as are necessary to assure compliance with applicable requirements of this Act, including the requirements of the applicable implementation plan.” This section also authorizes the Administrator to require monitoring and analysis of pollutants; requires permits to include monitoring, inspection, and reporting requirements; and allows issuance of “general” permits (covering “numerous similar sources”), as well as permits covering “temporary sources.”

In addition, this section establishes a permit “shield” that protects sources that are in compliance with their permits against allegations that they are in violation of the requirements of § 502, and that allows permitting authorities some discretion to expand the shield under certain conditions.

□ **Section 505: Notification to Administrator and Contiguous States.** Section 505 requires each permitting authority to provide to EPA copies of each permit application as well as a copy of each permit the authority proposes to issue. In addition, permitting authorities are required to notify all states whose air quality may be affected and that are contiguous to the state in which the source is located, or that are within 50 miles of the source, of each permit application or proposed permit, and to allow those states to comment on the permit.

This section also grants EPA the authority to object to permits proposed to be issued by the permitting authorities, and requires the Administrator to issue such an objection upon receipt of a petition demonstrating that the permit would violate the Act. It provides that interested persons may seek judicial review if the Administrator fails to object to a permit that would violate the Act. Permitting authorities are allowed 90 days to revise permits to resolve an EPA objection. If no such revision is accomplished, EPA is required to take final action to issue or deny the permit. The Administrator may waive the requirements for review and objection for sources other than major sources.

□ **Section 506: Other Authorities.** Section 506 preserves the ability of states and interstate permitting authorities to establish “additional permitting requirements not inconsistent with this title.” In addition, this section makes clear that the provisions of this title shall apply to permits implementing the requirements of title IV (the acid rain title) “except as modified by that title.”

□ **Section 507: Small Business Stationary Source Technical and Environmental Compliance Assistance Program.** Section 507 requires states to establish programs to assist “small business stationary sources” with permit compliance. Such programs are to work with eligible sources to ensure that the requirements of the permit program are understandable and to assist the sources in their compliance efforts.

□ **Permits for Sources of Hazardous Air Pollutants.** Title III of the Amendments (which revises Clean Air Act § 112) establishes certain separate requirements for permitting with respect to sources of hazardous air pollutants. These requirements are designed to be coordinated with the timetable and the requirements set out in the permits title, but they also address permitting for such sources in two situations where standards for regulating hazardous air pollutants are not yet established.

In the first situation, where the Administrator has failed to promulgate a “maximum achievable control technology” (MACT) standard by the date required for that standard, § 112(j) provides that a source must apply for a permit and that the Administrator and the state must establish an emission limitation in the permit that is equivalent to the standard that would have been promulgated had the deadline not been missed. In the second situation, where the administrator promulgates a MACT standard applicable to a source that has already received a permit, the standard shall be included in the permit when the permit is renewed, and the source shall be allowed a reasonable time to comply (no longer than eight years after the standard is promulgated, or eight years after compliance was required under the “equivalent emission limitation” described in § 112(j)(5)).

□ ***Permits Under the Acid Rain Title.*** Permits for sources regulated under title IV of the Act are designed to be coordinated with the requirements of the permit title. However, title IV establishes a somewhat different timetable than that created in the permits title for the submission of permits and separates the permit process into two distinct phases. Section 408(c) addresses permits required of sources participating in “Phase I” reductions of sulfur dioxide emissions. It requires sources classified as “affected sources” under §§ 404 and 407 of title IV to submit a permit application within 27 months of enactment of the Amendments (by February 1993). This deadline falls well before the deadline for permit applications established in §§ 502 and 503, which contemplates that the first wave of applications for permits from sources that are not affected by title IV or by the new provisions of § 112 might not occur until sometime in 1995 or 1996. Accordingly, title IV provides that EPA (not the states) shall administer the permits issued to these Phase I sources.

Title IV also provides for “Phase II” emission reductions. Sources required to have permits for Phase II must submit their permit applications on or before January 1, 1996. Phase II permits are to be implemented by the states consistent with the requirements of title V.

* * *

WESTERN STATES PETROLEUM ASSOCIATION v. EPA

87 F.3d 280 (9th Cir. 1996)

TASHIMA, Circuit Judge:

Title V of the 1990 Clean Air Act Amendments (Title V) established a new operating permit program to be administered pursuant to rules developed by the states and approved by the Environmental Protection Agency (EPA). The State of Washington submitted for EPA approval a Title V program that would exempt “insignificant emissions units” (IEUs) from permit application requirements, as well as monitoring, reporting and record-keeping requirements. The EPA granted only interim approval to Washington’s program and conditioned final approval on the repeal of the IEU exemption. We reverse the EPA’s decision as an abuse of discretion because it conflicts substantially with numerous EPA decisions in other states and localities.

BACKGROUND

Title V instituted a centralized permitting program to be administered by the states subject to EPA oversight. Through the program, all Clean Air Act substantive and procedural requirements applicable to a pollutant emitter are written in the emitter's operating permit. §§ 504(a)-(c). Each permit must include inspection, entry, monitoring, compliance certification, and reporting requirements to assure compliance with the Act. *Id.*

Title V directs the EPA to prescribe procedures for determining compliance, institute requirements for permit applications, and establish the minimum elements of a state permit program (including monitoring and reporting requirements). §§ 502(b)(1), (b)(2), 504(b). 40 C.F.R. Part 70 sets forth the regulations that the EPA adopted to implement Title V. The Part 70 regulations set forth the criteria for EPA approval of state permit programs.

The EPA has allowed states to exempt insignificant activities and emissions levels from certain requirements in order to reduce the regulatory burdens on emitters. 40 C.F.R. § 70.5(c)(3). Subject to EPA approval, each state determines what activities and emissions levels may qualify as insignificant. 40 C.F.R. § 70.5(c)(3).

Pursuant to § 502(d)(1), the State of Washington proposed a permit program to the EPA during November 1993. Washington's program designates a host of emissions as insignificant, e.g., emissions from roof vents, vehicle exhaust from repair shops, and emissions from fire-fighting equipment. WASH. ADMIN. CODE § 173-401-532. Washington's program exempts IEUs from the permit application requirements of 40 C.F.R. § 70.5. The program also exempts IEUs from the permit compliance requirements of 40 C.F.R. § 70.6, including monitoring, testing, reporting, record-keeping and compliance certification. WASH. ADMIN. CODE § 173-401-530(2)(c).

On November 9, 1994, the EPA rejected Washington's IEU provisions, granting only interim approval to the program. 59 Fed. Reg. 55,813 (1994). As a condition to final approval, the EPA required Washington to amend its IEU rules to disqualify any emissions unit subject to federally enforceable applicable requirements. 59 Fed. Reg. 55,813, 55,814, 55,818. The EPA's interim approval allowed Washington to begin implementing its permit program while addressing the defects identified by the EPA. 40 C.F.R. § 70.4(e)(3).

Petitioners, five air pollutant emitters and two trade associations of pollutant emitters, filed a timely petition for judicial review on January 6, 1995. The State of Washington Department of Ecology moved to intervene in support of its program. On July 7, 1995, we granted the EPA's motion to vacate the portion of its decision that concerned IEUs and specifically retained jurisdiction of this matter.

On remand, the EPA adopted a final decision on November 15, 1995. 60 Fed. Reg. 62,992, 62,993 (1995). The EPA found that Part 70 allows states to exempt IEUs from Title V permit applications (40 C.F.R. § 70.5), but not from the permit content requirements of 40 C.F.R. § 70.6. *Id.* at 62,993. Thus, the EPA disapproved Washington's exemption of IEUs from Title V monitoring, reporting and record-keeping requirements. Petitioners seek review of this final agency decision.

We have jurisdiction to review the EPA's final action pursuant to § 307(b)(1) of the Clean Air Act, and pursuant to our July 7, 1995, order retaining jurisdiction of this appeal.

STANDARD OF REVIEW

We review final administrative actions of the EPA pursuant to the Clean Air Act under the same standard as set forth in the Administrative Procedure Act. *Abramowitz v. United States EPA*, 832 F.2d 1071, 1074 (9th Cir. 1987). We will reverse the EPA's decision only if

it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” § 307(d)(9)(A); *Ober v. United States EPA*, 84 F.3d 304, 307 (9th Cir. 1996).

Under this standard, we must give deference to the EPA’s interpretation of its own regulations, if its interpretation is not unreasonable. *Id.*; *Citizens for Clean Air v. United States EPA*, 959 F.2d 839, 844 (9th Cir. 1992). However, if the EPA has abused its discretion in failing to follow its own prior standards, then we need not defer to the EPA’s anomalous interpretation. *Oil, Chemical and Atomic Workers Int’l Union, Local 1-547 v. NLRB*, 842 F.2d 1141, 1143 n.1 (9th Cir. 1988).

DISCUSSION

The EPA asserts that Part 70 allows IEUs to be exempted from permit application requirements, but not from permit content requirements. Section 70.5, which addresses requirements for permit applications, reads, in relevant part: “The Administrator may approve as part of a State program a list of insignificant activities and emissions levels which need not be included in permit applications.” 40 C.F.R. § 70.5(c). The EPA points out that § 70.6, which addresses permit content requirements, contains no such exemption for IEUs.

However, the EPA has identified only two Title V programs that in fact apply permitting requirements to IEUs—the Oregon and San Francisco Bay Area Quality Maintenance District programs. On the other hand, the EPA has condoned the exemption of IEUs from the permit content requirements of § 70.6 in at least eight other state and local programs. For example, the EPA has granted final, full approval to Title V programs from Ohio and Knox County, Tennessee, that omit IEUs entirely from permits. The EPA has also proposed to approve the programs of Jefferson County, Kentucky and Massachusetts, despite their exemption of IEUs from permitting requirements. Although the EPA required revisions in the Title V programs of Florida, North Dakota, Hawaii, and North Carolina, the EPA’s objections to those programs were based on grounds other than their general exemption of IEUs from the majority of permit content requirements.

The EPA urges this court to ignore the apparent inconsistency between its Washington decision and its approval of other state programs on the ground that the Washington decision represents the EPA’s first thorough, well-reasoned discussion of whether IEUs may be exempted from § 70.6’s permitting requirements. Even so, the EPA’s rejection of Washington’s IEU rules is undeniably a change “in agency interpretation [which] must be supported by a ‘reasoned analysis’ over and above that required for an interpretation in the first instance.” *Flagstaff Medical Center, Inc. v. Sullivan*, 962 F.2d 879, 886 (9th Cir. 1992).

The EPA may have the power to adjust its policies and rulings in light of experience and to announce new principles in an adjudicatory proceeding. *California Trucking Ass’n v. ICC*, 900 F.2d 208, 212 (9th Cir. 1990). However, the EPA “may not depart, *sub silentio*, from its usual rules of decision to reach a different, unexplained result in a single case.” *Id.* To the contrary, the EPA must clearly set forth the ground for its departure from prior norms so that we may understand the basis of the EPA’s action and judge the consistency of that action with the EPA’s mandate. *Atchison, T. & S.F. Ry. v. Wichita Bd. of Trade*, 412 U.S. 800, 808 (1973); *Arizona Elec. Power Coop., Inc. v. United States*, 816 F.2d 1366, 1374 (9th Cir. 1987).

In this case, the EPA fails to provide any explanation at all for its anomalous Washington decision. Instead, it flatly denies the obvious inconsistency between its rejection of the Washington program and its approval of other state programs. 60 Fed. Reg. 62,992, 62,995 (1995) (“the commentators can point to no instance in which EPA has approved a state program which expressly exempts IEUs with applicable requirements from the permit content requirements of section 70.6.”).

The EPA relies heavily on *Puerto Rican Cement Co. v. United States EPA*, 889 F.2d 292 (1st Cir. 1989), for the proposition that “[n]o large agency can guarantee that all its administrators will react similarly, or interpret regulations identically, throughout the United States.” *Id.* at 299. In that case, the First Circuit found no significant, legally recognizable conflict that the EPA had to justify.

The EPA’s reliance on *Puerto Rican Cement* is misplaced. Central to the holding in that case was the fact that the “deviant” interpretation occurred but once; EPA materials written both before and after the deviant letter were consistent with the EPA’s position in the litigation. *Id.* Moreover, the deviant interpretation appeared in a letter written by a lower level official and did not reflect an unconscious change in established EPA policies. *Id.*

By contrast, there are at least eight EPA decisions published in the Federal Register that conflict with the Washington decision here. Further, the EPA issued the conflicting decisions both before and after the Washington decision. The EPA approved Ohio’s IEU rules, which omit IEUs entirely from permits, on August 15, 1995. 60 Fed. Reg. 18,790 (1995). The EPA then proposed to disapprove Washington’s exemption of IEUs from § 70.6 permit content requirements on September 14, 1995. 60 Fed. Reg. 50,166, 50,173 (1995). Eleven days later, on September 25, EPA published its final interim approval of Florida’s Title V program. 60 Fed. Reg. 49,343 (1995). The EPA issued its final decision disapproving Washington’s IEUs rules on November 15, 1995. 60 Fed. Reg. 62,997. That same day, the EPA published its final interim approval of North Carolina’s Title V program. 60 Fed. Reg. 57,357 (1995). Ten days later, the EPA published its proposal to approve the Jefferson County, Kentucky program. 60 Fed. Reg. 58,033 (1995). Finally, the EPA published interim approval of Massachusetts’ program on February 2, 1996, 61 Fed. Reg. 3827 (1996), and full approval of the Knox County, Tennessee program on April 19, 1996. 61 Fed. Reg. 18,966 (1996). The fact that the EPA changed its mind and course four times refutes its argument that the Washington decision marked a reflected, deliberate, or lasting change of policy.

In sum, the EPA has approved numerous state programs omitting IEUs from § 70.6’s monitoring and compliance requirements, but rejected Washington’s IEU rules on that very same basis. The EPA’s reliance on its broad supervisory power over state Title V programs does not provide an adequate basis to support its otherwise arbitrary treatment of Washington’s IEU rules. *Cf. Arizona Elec. Power Coop., Inc.*, 816 F.2d at 1374 (agency’s “broad discretionary power” is not “an adequate basis to support its otherwise arbitrary treatment” of a single case). We need not defer to the EPA because the EPA has abused its discretion in departing from its own prior standards. *Oil, Chem. and Atomic Workers*, 842 F.2d at 1143 n.1. Because the EPA has failed to offer a sufficient explanation for its differential treatment of Washington’s Title V program, we reverse EPA’s decision on Washington’s IEU rules. [Citations omitted.]

* * *

CONCLUSION

We reverse the EPA’s decision with respect to Washington’s proposed IEU regulations as an unexplained departure from precedent, and thus, as an abuse of discretion. On remand, the EPA shall grant full approval to Washington’s proposed Title V program, as modified to correct the four other deficiencies identified in the EPA’s November 9, 1994, notice. * * *

NOTES

1. The permit provisions of the 1990 Amendments are modeled after the NPDES permit system contained at § 402 of the Clean Water Act. Like the NPDES program, Title V requires “each source of air pollution covered by the permitting requirements . . . to obtain a permit that set[s] out an enforceable list of all conditions, emission standards, and limitations applicable to that source, and . . . to comply with each condition, standard and limitation in that permit as a condition of operations.” Stephen E. Rody, *Permitting and Enforcement Under the Clean Air Act Amendments of 1990*, 21 ENV’T L. REV. 10,178, 10,182 (1991).

2. *Permit Fees.* One of the most remarkable provisions of the Clean Air Act Amendments of 1990 is the requirement that permitted sources pay an annual fee that is “sufficient to cover all reasonable (direct and indirect) costs required to develop and administer the permit program . . .” § 502(b)(3)(A). These include the costs of—(i) reviewing and acting on permit applications; (ii) implementing and enforcing the permit; (iii) monitoring ambient air quality as well as emissions from the source; (iv) preparing rules and other guidance; (v) modeling, analyses and demonstrations; and (vi) preparing inventories and tracking emissions. *Id.* The minimum fee is \$25/ton of regulated pollutant emitted by the source (unless EPA determines that some lower amount will allow full recovery of the “reasonable costs” noted above) § 502(b)(3)(B). Aside from the costs to permittees, what makes this provision so remarkable?

3. *Exemptions.* EPA may exempt categories of sources from the permit requirements if it finds that such requirements are “impracticable, infeasible or unnecessarily burdensome on such categories. Exemptions are not allowed, however, for “major sources.” § 502(a). What is a “major source” within the meaning of this section? See § 501(2).

4. *Permit Shield.* Section 504(f) of the Act makes clear that compliance with the terms of a permit “shall be deemed compliance with” the permit requirements of § 502 of the Act. Moreover, EPA may, under certain circumstances, provide by rule that compliance with a permit shall be deemed compliance with other applicable provisions of the Act.

5. *EPA Veto Authority.* Section 505(b) of the Act gives the EPA authority to veto permits that are not in compliance with the law. The Act requires EPA to object to the issuance of a permit within 45 days from receipt of the application. EPA’s objection must be accompanied by a statement of reasons. If EPA fails to object within 45 days, “any person” may petition the EPA within 60 days thereafter to file such an objection. § 505(b)(2). A petitioner may only raise objections, however, that were raised during the public comment period on the application. EPA has 60 days to grant or deny the petition. The permitting authority may not issue a permit to which EPA objects until it is revised as necessary to meet EPA’s objections. If the permitting authority fails to revise the permit as required by EPA within 90 days following the objection, EPA must issue or deny the permit in accordance with the Act. Judicial review is not available until a permit has been finally issued or denied. § 505(c).

6. *Monitoring and Reporting.* The Act establishes a comprehensive system for self-monitoring of air pollution emissions and of self-reporting of compliance. See e.g., §§ 114(a)(3); 502(b)(2); 504(b), (c). Stiff criminal penalties may be imposed for falsifying data (§ 113(c)(2)), and substantial civil penalties are allowed for any violation of the permitting requirements. § 113(d)(1)(B). Furthermore, “bounties” are allowed to persons who furnish information which leads to the imposition of criminal or civil sanctions. § 113(f). Taken

together, these provisions should help insure that the public will play an aggressive watchdog role in monitoring compliance with the law.

7. *Operational Flexibility.* In response to operator's concerns about the need for minor permit revisions without a cumbersome regulatory process, § 502(b)(10) allows changes to a permitted facility without obtaining a permit revision if the changes are not "modifications" within the meaning of any of the various definitions of that term found in Title I of the Act (*see e.g.*, §§ 111(a)(4); 112(a)(5); 171(4); 182(c)(7), (8); 182(e)(2)), and the emissions do not exceed that allowed under the permit. Both EPA and the state must generally be afforded seven days' notice before such changes may take effect.

8. EPA adopted permit rules to implement Title V in 1992. 57 Fed. Reg. 32,250 (1992). The rules are codified at 40 C.F.R. part 70.

9. A good reference for permit applications is CHARLES K. KNAUSE, SHANNON S. BROOM, AND MICHAEL E. WARD, *THE CLEAN AIR ACT OPERATING PERMIT PROGRAM: A HANDBOOK FOR COUNSEL, ENVIRONMENTAL MANAGERS AND PLANT MANAGERS* (1993).

10. The new permitting provisions contained in Title V of the Act are significant but not exclusive. Separate permitting standards apply to sources subject to the Acid Precipitation Program contained in Title IV of the Act (§ 408), sources of hazardous air pollution (§ 112(j)), as previously described, new or modified major stationary sources in nonattainment areas (§ 173), and "PSD" areas. § 165. The PSD provisions are at issue in the following case.

HAWAIIAN ELECTRIC CO. v. EPA

723 F.2d 1440 (9th Cir. 1984)

GOODWIN, Circuit Judge.

Hawaiian Electric Company, Inc. (HECO) seeks review of an EPA determination not to proceed with consideration of modifying PSD permit HI 78-02 until HECO complies with the procedure for permit revision applying to major modifications. HECO's appeal is timely under § 307(b) (Clean Air Act). We affirm EPA's determination and hold that all other issues raised are not ripe for review.

HECO's Kahe power plant is Oahu's greatest source of sulfur dioxide emissions. In 1978 it consisted of five oil-fired units, all built before 1975, with a total capacity of about 500 megawatts. In 1978 HECO burned 2% sulfur oil. Unit 6, a new 146 megawatt oil-fired unit, began operation in November 1980.

EPA issued Prevention of Significant Deterioration (PSD) Permit HI 78-02 to HECO on January 26, 1979. EPA issues PSD permits in Hawaii because the state does not have an EPA approved PSD permit program as part of its State Implementation Plan (SIP), § 110; 40 C.F.R. § 51.18. To allow operation of Unit 6, the PSD permit required that the existing units reduce emissions by shifting to 0.5% sulfur oil. When Unit 6 began operation, all six units began burning the 0.5% oil.

A PSD permit was required because in 1978 EPA designated the surrounding area as not able to be classified for compliance with National Ambient Air Quality Standards (NAAQS)

for sulfur dioxide (40 C.F.R. 81.312 (1978)).¹¹ The use of 0.5% sulfur oil was required because a wind tunnel dispersion model indicated that higher sulfur content would not meet NAAQS. After the use of 0.5% oil began, HECO determined by a mathematical model that the wind tunnel analysis was inadequate. EPA refused to accept HECO's conclusions, but as a result of further discussions, HECO established a seven-station monitoring network. Based on results at the end of one year of monitoring (completed on March 15, 1983), HECO concluded that Units 1-5 could burn higher sulfur fuel without violating NAAQS.¹² On March 18, 1983, HECO submitted the information to EPA and petitioned for reconsideration of the PSD permit requirement that Units 1-5 use 0.5% sulfur fuel.

In its March 25, 1983, response EPA stated:

Our preliminary review of the new information submitted by HECO confirms that HECO would be able to increase the fuel sulfur content at Units 1-5 without adversely affecting air quality.

However, EPA went on to state that under 40 C.F.R. § 52.21(b)(2)(iii)(e)(1) of its PSD regulations, the change in fuel would be a "major modification" requiring a new PSD permit for Units 1-5.

To obtain a PSD permit for Units 1-5, additional data would have to be submitted. § 165; 40 C.F.R. § 52.21(j)-(p). In the March 25, 1983, letter EPA specified that the additional data required were an analysis of Best Available Control Technology (BACT) and an "additional impacts analysis" (dealing with potential impairment to visibility, soils, and vegetation). Additionally, BACT would have to be employed on Units 1-5. § 165(a)(4); 40 C.F.R. § 52.21(j)(2). There is a strong possibility that BACT for Units 1-5 would be identical to that already required for Unit 6, i.e., 0.5% sulfur oil. As part of BACT, control of other pollutants such as particulate matter could also be required. 40 C.F.R. § 52.21(j)(3).

I. FINAL ACTION

A. Application of major modification definition

EPA has determined that HECO's proposed change to higher sulfur fuel is a major modification, and has refused to consider HECO's petition until further information is submitted.

* * *

Intervenors American Lung Association, et al., argue that there is insufficiently immediate impact on an interest of HECO because the Kahe plant is within an area designated as nonattainment for sulfur dioxide. If the Kahe area continues to be subject to the requirements of Part D of the Clean Air Act, dealing with nonattainment, rather than Part C, dealing with PSD, a different kind of permit will be required to allow a fuel switch. It appears very unlikely that such a permit could be obtained. EPA indicated to HECO in 1981 that as long as the Kahe area remains nonattainment, Part D of the Act would apply. EPA further indicated that since the State of Hawaii does not have an acceptable new source review procedure, the Kahe area is covered by the construction moratorium implemented by 40 C.F.R. § 52.24. See § 110(a)(2)(I); *Connecticut Fund for Environment v. E.P.A.*, 672 F.2d 998 (2d

¹¹ In 1979 the area was reclassified as nonattainment for sulfur dioxide (40 C.F.R. § 81.312 (1982)).

¹² HECO apparently argues that respect of PSD increments is not a relevant consideration.

Cir. 1982), *cert. denied*, 459 U.S. 1035 (1982). Until the State of Hawaii establishes a new source review procedure, it is unlikely that the construction moratorium will be lifted. *Id.* Cf. e.g., 48 *Fed. Reg.* 50,686 (1983).

It thus appears that for any change to be foreseeable in the air pollution controls required at the Kahe plant, the Kahe area must be redesignated attainment and HECO's request for a change in its PSD permit must be granted. Indeed, the State of Hawaii has requested EPA to redesignate the area as attainment. And, EPA may be able to do so after complying with the Administrative Procedure Act. *Western Oil & Gas v. EPA*, 633 F.2d 803 (9th Cir. 1980). That the two decisions are intimately connected is emphasized by the fact that the nonattainment designation applies only to the area immediately surrounding the Kahe plant. See 40 C.F.R. § 81.312 (1982).

* * *

B. The PSD permit

* * *

b. Modeling

HECO's petition for reconsideration essentially depends on its assertion that the modeling which justified the original imposition of the permit was flawed.

Congress' concern about modeling science led it to require EPA to establish uniform modeling techniques for use in PSD permitting and to review and update those models periodically as modeling science developed. See §§ 165(e)(3)(D) and 320. EPA did develop modeling guidelines, 40 C.F.R. 52.21(1), and they were subsequently upheld on judicial review. *Alabama Power Co. v. Costle*, 636 F.2d 323, (D.C.Cir. 1979). The courts have recognized the need for agency discretion in applying the results of modeling. *Wisconsin Electric Power Co. v. Costle*, 715 F.2d 323 at 330-31 (7th Cir. 1983)

* * *

Nothing in the Clean Air Act or its legislative history indicates that Congress intended that EPA should have to reconsider each and every PSD permit if modeling predictions were subsequently drawn into question. In fact, Congress attempted to avoid excessive bureaucratic contention by requiring EPA to make a decision on all PSD permit applications within one year. § 165(c). This effort would be frustrated if PSD permits could routinely be challenged *de novo*.

In addition, we have held that post-decision studies may not be used to challenge an agency decision absent a showing that such a decision was based on assumptions that "were entirely fictional or utterly without scientific support." *Ass'n of Pac. Fisheries v. EPA*, 615 F.2d 794, 812 (9th Cir. 1980); *accord*, *Wisconsin Electric Power Co. v. Costle*, 715 F.2d 323 (7th Cir. 1983). In this case, HECO concedes that the permit was reasonable when issued.

c. Policy challenge to PSD

HECO maintains that the 0.5% sulfur oil requirement was included in the original permit solely to achieve NAAQS. It argues that its request for reconsideration of the permit should therefore not involve PSD review. It argues that the Clean Air Act gives EPA no authority to require reductions in emissions from existing sources which are not being modified except if necessary to attain and maintain NAAQS. HECO, however, overlooks the point that the requirement was imposed on existing generators as a condition of approval to operate a new generator which would add to pollution emissions. Had the limitation not been imposed, both HECO and EPA agree that available information indicated NAAQS might have been violated for sulfur dioxide.

* * *

HECO also attempts to maintain that EPA may not impose emission restrictions that are more stringent than necessary to protect NAAQS. But HECO itself admits in its brief that the ultimate purpose of the PSD program is to maintain air quality better than NAAQS. Indeed, Congress repeatedly emphasized that NAAQS alone were insufficient to protect public health and welfare.

* * *

In sum, Congress found that it was important to reduce pollution levels below those mandated by the standards and that the best means of doing so was to require the installation of BACT on all sources which would otherwise increase pollution. Therefore, it is absurd for HECO to maintain that EPA may not, through a PSD permit, require pollution controls which yield air quality better than NAAQS.

II. MAJOR MODIFICATION

* * *

Title 40 C.F.R. 52.21(b)(2) provides:

(2)(i) "Major modification" means any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act.

* * *

(iii) A physical change or change in the method of operation shall not include:

* * *

(e) Use of an alternative fuel or raw material by a stationary source which: (1) The source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975 pursuant to 40 C.F.R. 52.21 or under regulations approved pursuant to 40 C.F.R. 51.18 or 40 C.F.R. 51.24[.]

An increase in sulfur content of fuel constitutes a "major modification" under this definition if the increase (1) results in a significant net emissions increase and (2) amounts to a physical or operational change. HECO does not dispute that the increase it proposes would result in a significant net emissions increase. Rather, HECO argues that the increase would not be a physical or operational change. HECO is wrong.

The market recognizes 0.5% and 2% sulfur oil as different fuels with distinct prices. Also, EPA in the past has clearly distinguished the two fuels when, as in this case, there is a permit condition specifying the sulfur content of fuel. Although Units 1-5 were able to use 2% sulfur fuel before January 6, 1975, the sulfur content increase is prohibited by an enforceable permit condition established after January 6, 1975, pursuant to 40 C.F.R. 52.21. As a result, the proposed fuel switch does not fit within the fuel switching exemption from the definition of major modification contained in 40 C.F.R. § 52.21(b)(2)(iii)(e)(1).

In one past instance, EPA explained the requirements of 40 C.F.R. § 52.21(b)(2)(iii)(e)(1) as follows:

Concerning PSD applicability, a change in sulfur content of a fuel burned at a source (e.g. 1% sulfur oil to 2.2% sulfur oil) is not considered a modification and, therefore not subject to PSD permit procedures *unless the content of the fuel is limited by an enforceable permit condition and/or the source is not physically capable of burning the higher sulfur*

fuel. Normally a source is physically capable of using a particular fuel without regard to the fuel's sulfur content and therefore, *enforceable permit condition [sic] tend to be the more important concern when determining PSD applicability.*

(Emphasis added.) Internal EPA memo concerning Delmarva Edge Moor Station.

* * *

HECO and amici argue that the environmental benefit of using 0.5% sulfur oil is not worth the economic expense. This argument is untimely. Economic considerations are not relevant in determining whether a PSD permit is required. Economic considerations are only evaluated in determining the control level (BACT) required under PSD. *See* 40 C.F.R. § 52.21(b)(12) (1982) and § 169(3). Thus the economic issues are not yet ripe for review.

A policy reason for requiring PSD review, in addition to those discussed in preceding sections, is that subsequent PSD permits to other sources are premised on stability of the level of emissions from existing sources. §§ 160-169. The preamble to the 1980 PSD regulations stated that "[i]n EPA's view, any switch to another fuel or raw material that would distort a prior assessment of a source's air quality impact should have to undergo [PSD] scrutiny." 45 Fed. Reg. 52,676, 52,704 (1980). Such distortion is exactly the effect HECO's proposed fuel switch would have. EPA notes that other projects have in fact relied upon HECO's PSD permit in calculating their air quality impact for PSD purposes. The Hawaiian Independent Refinery, Inc., located on Oahu, received a PSD permit for several preheaters on June 25, 1980, and submitted an application for a permit for a hydrogen plant on January 25, 1981. The applications for both of these projects calculated available PSD increment in the Kahe area based upon use of no greater than 0.5% sulfur fuel at Kahe Units 1-5. Any emissions increase HECO makes will consume this available PSD increment.

Thus, based on a literal reading of the applicable regulation and on policy considerations, we affirm EPA's application of the "major modification" definition to HECO's proposed fuel switch. We decline to review all other issues.

Remanded to the Environmental Protection Agency for any further proceedings.

NOTES

1. HECO seeks reconsideration of the 0.5 percent sulfur oil condition in its permit on the theory that the model used to predict the level of pollution caused by various sulfur content oils was inaccurate. Suppose HECO is correct and that 2.0 percent sulfur oil could be used by HECO without violating the PSD increments. Under the Ninth Circuit's decision, what, if anything, can HECO do to obtain a permit change that reflects a more accurate model?
2. The HECO plant was located in an area designated as nonattainment for sulfur dioxide. 723 F.2d at 1441, n.1. Why then was a PSD permit for SO₂ emissions required?
3. The court notes that if the area continues to be subject to the nonattainment requirements of the Act, a different kind of permit will be required. How will this permit differ from the PSD permit? Which will be more difficult to obtain? When should such a permit be required?
4. In 1979, HECO received a PSD permit only for Unit 6. Note, however, that the permit required as a condition that the existing Units 1-5 shift from 2.0 percent to 0.5 percent

sulfur oil. When HECO tried to change Units 1-5 back to 2.0 percent sulfur oil, EPA informed HECO that such a shift would constitute a major modification and require HECO to obtain PSD permits for Units 1-5. What problems does this create for HECO? Why wasn't the original shift from 2.0 percent to 0.5 percent deemed a major modification? See §§ 111(a)(2), (3), (4); 169(a); 40 C.F.R. § 52.21(b)(2). Was it lawful for the EPA to require a switch to 0.5 percent sulfur oil for Units 1-5 as a condition for granting a permit for Unit 6? See § 165(a)(3), (4).

5. In seeking to change the fuel in Units 1-5 back to 2% sulfur oil, HECO argues that the NAAQS will not be violated, and that respect of PSD increments is not a relevant consideration. 723 F.2d at 1441, n. 2. Is HECO right? When was the baseline set for this PSD area under the law?

PROBLEM #5: PERMITS FOR STATIONARY SOURCES

The Hard Rock Cement Company proposes to construct a Portland cement plant within the Limestone Intrastate Air Quality Control Region in the State of Potomac. The site of the proposed plant is approximately 100 miles due east of the Emerald Caverns National Park, a mandatory, Federal Class I area. The uncontrolled emissions from the proposed plant are estimated at 1,000 tons of particulates/year. No other criteria pollutants will be emitted. The Limestone AQCR has been designated a nonattainment area for carbon monoxide and ozone. It is an attainment area for all other criteria pollutants. The State of Potomac operates under an EPA approved SIP.

You are Hard Rock's general counsel. Hard Rock's president has asked you to explain the process for review, approval and operation of the incinerator under the federal Clean Air Act and the Potomac SIP. (Review §§ 111, 112, 165(d); 169(1); 169A(g)(7); 172(b)(6); 302(j), and Title V.)

In addressing this problem consider the following:

- (a) whether a permit is required by Subchapter V;
- (b) whether a permit is required by subchapters C and/or D of Title I of the Act;
- (c) whether the facility is subject to visibility protection requirements;
- (d) whether there are applicable NSPSs; (see 40 C.F.R. part 60).
- (e) whether the facility is (or may be) subject to the hazardous air pollutant provisions of § 112. See 40 C.F.R. part 63; see also 57 Fed. Reg. 31,591 (1992).

Among the pollution control options being considered are several different types of baghouses that will reduce particulate emissions anywhere from 90% to 99.5%. Are there any possible advantages under the Clean Air Act to using the most expensive technology that will reduce emissions by 99.5%? See *Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979), *infra* at Chapter 7.

D. Hazardous Air Pollutants

Under the law in effect before 1990, a hazardous air pollutant (HAP) was defined as “an air pollutant to which no ambient air quality standard is applicable and which . . . causes or contributes to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness.” HAP standards had to be set at a level that “provides an ample margin of safety to protect public health.” Unfortunately, for many hazardous air pollutants, no known level is “safe” in the sense that it creates no risk to public health. As a result, if strictly applied, the original HAP program threatened to shut down major industries. The EPA was accordingly reluctant to promulgate HAP standards, and the program languished until passage of the 1990 Amendments. *See generally, Natural Resources Defense Council, Inc. v. EPA*, 824 F.2d 1146, *en banc*, (D.C. Cir. 1987).

The 1990 amendments dramatically lowered the threshold for finding an air pollutant to be hazardous. Under § 112(b)(3)(B), a substance must be listed as a HAP if it is “known to cause, or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects.” Adverse effects on the environment, however, may not be the sole basis for listing a HAP. § 112(b)(2). Importantly, however, the 1990 Amendments also radically altered the manner for regulating HAPs. Initially at least, regulation will be based upon technological rather than health standards. The new program has five significant parts as described below.

1. Listing HAPs. Congress established an initial list of 189 HAPs, but the list can be modified by the EPA, on its own motion, or following a petition by a private party. § 112(b)(2), (3). A petition must include supporting documentation and EPA must grant or deny a petition within 18 months. § 112(b)(3)(A). EPA may not deny a petition solely on the grounds that it has inadequate resources or time for review, but it is not clear what remedy is available to a petitioner if EPA simply fails to act on a petition within the prescribed time.

2. Listing Categories and Classes of HAPs. By November 15, 1991, EPA was required to publish a list of categories and subcategories of sources of all listed HAPs. § 112(c)(1). The initial list was not promulgated, however, until July, 1992. 57 Fed. Reg. 31,576 (1992). The initial list includes 166 “major sources” and 8 “area sources.” The significance of this distinction is described below. A schedule for the promulgation of HAP standards for each of these sources was published in the Federal Register on December 3, 1993. 58 Fed. Reg. 63,491 (1993).

3. Phase I Emission Standards. Following publication of the list of categories of sources, the EPA published a schedule for promulgating the emission standards that will be established for each of these categories. 58 Fed. Reg. 63,941 (1993). Under § 112(e)(1)(A) and (B), the EPA was required to establish emission standards for coke ovens and 40 other sources by the end of 1992. For 25% of the remaining sources, standards were required by November, 1994; for 25% more sources, by November 1997; and for all sources by November 15, 2000. If EPA fails to meet its deadlines established by the schedule, a standard, determined *ad hoc*, will nonetheless be imposed on major sources of HAPs “equivalent to the limitation that would have applied to such source if an emission standard had been promulgated in a timely manner. . . .” § 112(j)(5). This provision does not take effect, however, until 18 months after the deadline, and then only where a Title V permit program is in effect. § 112(j)(2).

Unlike the standards imposed under prior law, Phase I emission standards are technology-based. Both new and existing sources of HAPs are required to meet the "maximum achievable control technology (MACT)." EPA is required to promulgate MACT standards for those categories and classes of facilities included on its list. See 40 C.F.R. part 63. This program should work much like the current NSPS program.

MACT for existing sources must be no less stringent than "the average emission limitation achieved by the best performing 12 percent" in that category. § 112(d)(3)(A). (If fewer than 30 sources exist in a category the MACT is to be based upon the best five. § 112(d)(3)(B).) Note that these are *minimum* standards, and EPA has discretion to impose more stringent standards for individual categories. For new sources, MACT may be no less stringent than "the emission control that is achieved in practice by the best controlled similar source." § 112(d)(3).

Generally, MACT standards apply to all sources of HAPs, but EPA may limit their applicability to "major sources" which are defined to include sources which emit 10 tons or more of a single HAP each year or 25 tons or more of any combination of HAPs each year. § 112(a)(1). EPA may impose separate standards for smaller "area sources." § 112(a)(2). At a minimum, such standards must reflect generally available control technology (GACT) or management practices. § 112(d)(5).

To encourage early emissions control, § 112(i)(5) allows sources to obtain a six year extension on meeting MACT if they can achieve a 90% reduction of gaseous HAPs, or a 95% reduction of particulate HAPs before applicable standards are proposed.

4. Report to Congress. By November 15, 1996, EPA was required to report to Congress on—(a) the methods of calculating the risk to public health that remains after applying MACT; (b) the public health significance of such estimated remaining risk and the technology and commercially available methods and costs of reducing such risks; (c) the actual health effects to persons living in the vicinity of HAP sources; and (d) recommendations for legislation regarding the residual risk from HAPs. The purpose of this report is to help Congress to decide whether it should enact new legislation before Phase II of the HAP program takes effect. See H.R. REP. NO. 490, 101st Cong., 1st Sess. 330 (1990).

5. Residual Risk—Phase II Emission Standards. Assuming that Congress does not enact new legislation, EPA is obliged to promulgate additional emission standards eight years after the promulgation of standards for particular categories or classes of sources. These Phase II standards are intended to be more like the standards required under the pre-1990 law. In particular, they must assure an ample margin of safety to protect public health, unless a more stringent standard is necessary, taking into account costs, energy, safety and other relevant factors, to prevent an adverse environmental effect. For known or suspected carcinogens, the standards must be sufficient to reduce the lifetime excess cancer risk of the most exposed person to less than one in one million.

6. Accidental Releases. In addition to the HAP regulatory program, a separate program is established under § 112 to address the accidental release of substances that are "known to cause or may reasonably be anticipated to cause death, injury or serious adverse effects to human health or the environment." § 112(r)(3). The initial list, which must be promulgated by November 15, 1992, must contain at least 100 substances which pose the greatest risk. Sixteen of these substances are listed in the statutes. *Id.* The initial list was finally promulgated by the EPA in January, 1994. 59 Fed. Reg. 4478 (1994).

In conjunction with the accidental release program, a five person Chemical and Safety Hazard Investigation Board is established. § 112(r)(6). The Board is responsible for, among

other things, investigating accidents, issuing periodic reports with recommendations to reduce the likelihood or consequences of accidents, and issuing binding regulations regarding reporting of accidents. § 112(r)(6)(C).

NATIONAL MINING ASSOCIATION v. EPA

59 F.3d 1351 (D.C. Cir. 1995)

PER CURIAM:

This is a petition for review of an order of the Environmental Protection Agency implementing the 1990 amendments to § 112 of the Clean Air Act. Petitioners are General Electric Company and four trade associations: (1) National Mining Association, which represents companies that produce metal, coal, and minerals, and that manufacture mining equipment; (2) American Forest and Paper Association, which represents companies that make pulp, paper, paperboard, and solid wood; (3) Chemical Manufacturers Association, which represents companies that manufacture industrial chemicals; and (4) American Petroleum Institute, which represents companies engaged in the petroleum industry. We deny the petition for review with respect to the issues raised by General Electric, National Mining Association, and American Forest and Paper Association, but grant it with respect to Chemical Manufacturers Association and American Petroleum Institute's challenge.

I

In 1990, as part of its comprehensive overhaul of the Clean Air Act, Congress revised § 112 of the Act, which regulates emissions of hazardous air pollutants. Dissatisfied with EPA's health-based regulation of hazardous air pollutants under the 1970 program,¹³ Congress replaced this approach with a detailed, technology-based regulatory scheme. The 1990 amendments to § 112 establish an initial list, which EPA may periodically revise, of 189 hazardous air pollutants. § 112(b)(1)-(3). EPA must publish a list of "categories and subcategories" of "major sources" and certain "area sources" that emit these pollutants. § 112(c). For each listed "category or subcategory of major sources and area sources" of hazardous air pollutants, § 112(d) of the Act directs EPA to promulgate emission standards.

Under the Act, "major sources" of hazardous air pollutants are potentially subject to stricter regulatory control than are "area sources." For example, major sources must comply with technology-based emission standards requiring the maximum degree of reduction in emissions EPA deems achievable, often referred to as "maximum achievable control technology" or MACT standards. § 112(d)(1)-(2). In order to obtain an operating permit

¹³ The previous version of § 112 directed EPA to list those hazardous air pollutants that it intended to regulate because they might "cause, or contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible, illness." Pub. L. No. 91-604, 84 Stat. 1676, 1685 (1970) (*codified as amended at* 42 U.S.C. § 7412). For such pollutants, EPA was to institute emission standards that provided for "an ample margin of safety to protect the public health." *Id.* Over 18 years, EPA listed only 8 pollutants as hazardous, S. REP. NO. 228, 101st Cong., 1st Sess. 131 (1989), and regulated only some sources of 7 of these chemicals, *id.* at 128; H.R. REP. NO. 490(I), 101st Cong., 2d Sess. 322 (1990).

under title V of the Act, ss 501-507, major sources must comply with extensive monitoring, reporting and record-keeping requirements. Further, § 112(g) generally conditions the modification, construction or reconstruction of a major source on the source's meeting MACT emission limitations.

"Area sources" of hazardous air pollutants are not necessarily subject to such stringent regulation. EPA need not list all "categories and subcategories" of area sources, § 112(c)(3)⁴, and it does not have to establish emission standards for unlisted area sources, § 112(d)(1). For listed area sources, EPA may choose to promulgate emission standards requiring only "generally available control technologies or management practices." § 112(d)(5). These standards can be less rigorous than those required for major sources under § 112(d)(1). S. REP. NO. 228, *supra*, at 172. Area sources are not subject to title V permitting requirements, or to § 112(g)'s restrictions on modification, construction and reconstruction of their facilities.

In July 1992, pursuant to § 112(c)(1), EPA published an initial list of categories of sources that emit hazardous air pollutants, 57 Fed. Reg. 31,576 (1992), and almost seventeen months later, it published a schedule for promulgation of emission standards for these listed source categories, as required by § 112(e), 58 Fed. Reg. 63,941 (1993). In August 1993, in order to "eliminate the need to repeat general information and requirements within each [emission] standard," EPA proposed a rule codifying the "procedures and criteria needed to implement" emission standards for hazardous air pollutants. 58 Fed. Reg. 42,760, 42,760 (1993). It promulgated a final rule, which is the subject of this dispute, adopting these general provisions on March 16, 1994. 59 Fed. Reg. 12,408 (1994).

Among other things, the general provisions rule implements § 112(a)(1)'s definition of "major source." The rule defines "major source" in terms nearly identical to those in § 112(a)(1) of the Clean Air Act:

Major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.

59 Fed. Reg. at 12,433-34 (*to be codified at* 40 C.F.R. § 63.2). A "stationary source" is "any building, structure, facility or installation which emits or may emit any air pollutant." *Id.* An "area source [is] any stationary source . . . that is not a major source." *Id.* The preambles to the proposed and final rules, and other definitions adopted in the final rule explain in greater detail how EPA plans to identify major sources.

Petitioners challenge three aspects of EPA's implementation of the definition of "major source." First, National Mining Association and American Forest and Paper Association (collectively referred to as "National Mining Association") and General Electric question EPA's requiring the aggregation of all hazardous air emissions within a plant site—instead of only those emissions from equipment in similar industrial categories—in a § 112 major source determination. Second, National Mining Association challenges EPA's requiring the inclusion

⁴ EPA is directed to list only those "area sources" that present "a threat of adverse effects to human health or the environment." § 112(c)(3). No later than five years after November 15, 1990, EPA shall have listed sufficient categories of area sources to ensure regulation of 90 percent of area source emissions of the 30 hazardous air pollutants presenting the greatest threat to public health in the largest number of urban areas. *Id.* § 112(k).

of “fugitive emissions” in a source’s aggregate emissions in determining whether the source is major. Third, Chemical Manufacturers Association and American Petroleum Institute (collectively referred to as “Chemical Manufacturers Association”) contend that EPA overstepped its regulatory authority by permitting a source to reduce its “potential to emit” only with “federally enforceable” emission controls and limitations.

II

EPA promulgated the rule challenged here in accordance with the special rulemaking provisions of § 307(d). EPA rules that are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law” or in excess of EPA’s “statutory jurisdiction, authority, or limitations” must be set aside. § 307(d)(9). With respect to alleged procedural errors in EPA’s promulgation of a rule, these will invalidate the rule only “if the errors were so serious and related to matters of such central relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had not been made.” § 307(d)(8).

A

General Electric and National Mining Association have similar arguments against the final rule’s implementation of § 112(a)(1). Both maintain that EPA may not, in determining whether a site is a major source, include emissions from all facilities on a contiguous plant site under common control. These petitioners assert that, for purposes of major source determinations, EPA may aggregate emissions from different facilities on a contiguous plant site under common control only when the facilities fall within a similar industrial classification. General Electric says EPA must aggregate emissions on a “source category” basis; National Mining Association contends that EPA may combine emissions only if the emitting facilities fall within the same two-digit Standard Industrial Classification (SIC) Code.⁶

In the preamble to the final rule, EPA made clear that in determining whether a source is major, emissions from all sources of hazardous air pollutants within a plant site must be aggregated, so long as the sources are geographically adjacent and under common control. 59 Fed. Reg. at 12,412. As a result, if the total annual emissions of hazardous air pollutants from a plant site exceed the designated thresholds, each source emitting pollutants at the site must comply with the stricter MACT emission standards applicable to sources under § 112(d)(2), and with other requirements applicable to major sources.

Petitioners read § 112(a)(1) more restrictively. In their view, EPA’s approach will impermissibly regulate “minor facilities” that happen to be located at an industrial site with annual emissions of hazardous air pollutants that, in the aggregate, exceed the major source thresholds. They contend that EPA may require aggregation of emissions from sources only if those sources fall within a single source category—General Electric’s argument, or the same two-digit SIC Code—National Mining Association’s contention. It follows, according to petitioners, that a source must comply with regulatory requirements applicable to major sources only if it belongs to some group of sources at an industrial site emitting, in the aggregate, more than the major source threshold. Under petitioners’ theories, it is possible that only some of

⁶ Standard Industrial Classification Code refers to the nomenclature used to categorize industries. Facilities may be categorized into major groups (2-digit SIC Code), industry groups (3-digit SIC Code), or industry codes (4-digit SIC Code), depending on the level of detail appropriate. STANDARD INDUSTRIAL CLASSIFICATION MANUAL (Exec. Office of the President, Office of Management and Budget) 12 (1987).

a site's sources would have to comply with the regulatory requirements applicable to major sources, including the stricter emission limitations of § 112(d)(2). Other sources of hazardous air pollutants would be regulated as area sources, possibly subject to less stringent emission standards or to none at all. § 112(c)(5).

EPA rejected petitioners' methods of implementing "major source." With respect to General Electric's source category definition, EPA acknowledged that "[m]ore than one source category on the EPA's source category list may be represented within a plant that is a major source" of hazardous air pollutants, as is the case for a large chemical manufacturing complex. 59 Fed. Reg. at 12,411; *see also* 57 Fed. Reg. at 31,578 ("a large plant . . . would clearly be a 'major source,' but would also comprise multiple source categories"). Congress intended, according to EPA, "that all portions of a major source be subject to MACT [emission standards] regardless of the number of source categories into which the facility is divided." 59 Fed. Reg. at 12,411. "Thus, the EPA will set one or more MACT standards for a major source, and sources within that major source will be covered by the standard(s), regardless of whether, when standing alone, each one of those regulated sources would be major." *Id.* EPA also rejected the SIC Code approach to implementing "major source," advanced here by National Mining Association. Because § 112(a)(1) does not refer to SIC Codes, EPA reasoned that Congress intended major sources of hazardous air pollutants to "encompass entire contiguous . . . plant sites without being subdivided according to industrial classifications." 59 Fed. Reg. at 12,412. A separation of emission sources by SIC Codes "would be an artificial division of sources that, in reality, all contribute to public exposure around a plant site." *Id.*

If § 112(a)(1) is viewed in isolation, EPA's reading of the provision is not simply consistent with the provision; it is nearly compelled by the statutory language. Section 112(a)(1) states that a "group of stationary sources" need meet only three conditions to be termed a "major source": (1) sources within the group must be "located within a contiguous area"; (2) they must be "under common control"; and (3) in the aggregate, they must emit or, considering controls, have the potential to emit 10 or more tons per year of a single hazardous air pollutant or 25 or more tons per year of any combination of hazardous air pollutants. Section 112(a)(1) says nothing about combining emissions only from sources within the same source categories or SIC Codes. In this respect, EPA's definition of "major source," set forth in the preamble to the final rule, is faithful to the language of § 112(a)(1).

Petitioners ask us to look beyond the language of § 112(a)(1). In the first of several loosely connected arguments, General Electric recites fragments from § 112's other provisions, including: (1) § 112(c)(1), which directs EPA to publish "a list of all categories and subcategories of major sources and area sources"; (2) § 112(d)(1), which directs EPA to establish emission standards "for each category or subcategory of major sources and area sources"; and (3) § 112(j)(2), which describes what an operator of a "major source in [a] category" must do if EPA does not promulgate an emission standard for that "category of major sources." From these portions of § 112, General Electric leaps to the conclusion that "major source must be defined 'with reference to' (and cannot be broader than) the source category defined by EPA for § 112 regulation."

General Electric's logic is hard to grasp. Rather than supporting General Electric, the provisions the company invokes, read in full and in context, tend to support EPA's implementation of "major source" without reference to source categories. Section 112 directs EPA to perform certain tasks on a category-wide basis—it is to identify categories of major and area sources of hazardous air pollutants (§ 112(c)(1)), and it must promulgate category-wide emission standards for these sources (§ 112(d)(2)). It by no means follows that because the statute in several provisions uses the terms "major source" and "category" in the same sentence—which is all General Electric's argument amounts to—EPA must read a source

category restriction into § 112(a)(1)'s definition of "major source." Nor does § 112(c) somehow prohibit EPA from applying § 112(d)'s MACT emission limitations "to minor sources in a listed category of major sources without complying with the statutory requirements for listing area sources." Section 112(c) simply requires the listing of all major sources and those area sources presenting adverse health or environmental effects. § 112(c)(1), (3). Neither § 112(c) nor § 112(d) says anything about EPA's including "minor sources" in a "listed category of major sources."

* * *

National Mining Association takes a somewhat different tack in its challenge to EPA's definition of "major source." For serious, severe and extreme ozone nonattainment areas, § 182(c)-(e) and for the title V permitting program, § 501(2), the Act defines the terms "major source" or "major stationary source" in language very similar to that of § 112(a)(1). *See, e.g.*, § 182a(c) (defining "major source" as "any stationary source or group of sources located within a contiguous area and under common control" with emissions exceeding 50 tons per year of volatile organic compounds). As EPA acknowledges, to some extent it uses a SIC Code approach to defining "major source" in these programs. *See, e.g.*, 40 C.F.R. § 70.2 (emissions to be aggregated by SIC Code for title V major source determination).¹³ National Mining Association reasons that EPA is required to use the same approach in defining "major source" pursuant to § 112(a)(1).

This argument warrants little discussion. As EPA explained in the preamble to the final rule, "because of the different objectives of section 112 and title V . . . and because section 112 contains its own definition," it would define "major source" for purposes of § 112 without reference to SIC Codes. 59 Fed. Reg. at 12,412. The explanation is reasonable. Different programs have different objectives and structures. EPA is not bound to any one definition of "major source." *See Alabama Power*, 636 F.2d at 397-98 ("EPA has latitude to adopt definitions of . . . 'source' that are different . . . from those [used in other programs].") * * *

In a second argument, National Mining Association contends that EPA's definition of "major source" is inconsistent with the legislative history of the 1990 amendments to the Clean Air Act. It bases this conclusion on an excerpt from a House Report discussing the "major source" definitional language added to the ozone nonattainment provision in § 182 of the Act:

The definition of "major source" [in the ozone nonattainment area] *and elsewhere in the bill* uses the term "group of sources located within a contiguous area and under common control." The Committee understands this to mean a group of sources with a common industrial grouping, *i.e.*, the same two-digit SIC code. It is the approach followed by EPA as a result of the *Alabama Power* litigation. It avoids the possibility that dissimilar sources, like a power plant and an adjacent coal mine, will be considered as the same "source" because of common ownership.

H.R. REP. NO. 490(I), 101st Cong., 2d Sess. 236-37 (1990) (italics added). Seizing upon the italicized language, National Mining Association urges that "Congress intended that a source-based limitation, such as the SIC limitation, apply to all of the definitions" of "major source."

¹³ In August 1994, however, EPA proposed changing the definition of "major source" in the title V permitting rule so that it conformed with the definition of that term under the § 112 general provisions. 59 Fed. Reg. 44,460, 44,514 (1994).

We agree with EPA that the legislative history of the Clean Air Act does not compel a conclusion that Congress intended to limit “major source” in the way National Mining Association suggests. The section of the Report that specifically discusses § 112(a)(1)’s definition of “major source” contradicts the Association’s interpretation of the provision:

For purposes of the definition [of “major source”], *all* emissions of listed pollutants are counted from a group of sources within a plant boundary (contiguous property under common ownership). This is to assure that emissions from the facility *as a whole* are adequately controlled.

H.R. REP. NO. 490(I), *supra*, at 324 (*italics added*). The Senate Report contains similar language * * *. These explicit references to § 112(a)(1)’s definition of “major source” support EPA’s view. At most, the legislative history leaves unresolved whether the agency must define “major source” with reference to SIC Codes. In such circumstances, “it is enough that the Agency’s construction is reasonable.” *Natural Resources Defense Council v. EPA*, 22 F.3d 1125, 1141 (D.C. Cir. 1994) (*citing Ohio v. EPA*, 997 F.2d 1520, 1527 (D.C. Cir. 1993)). EPA’s interpretation of “major source” satisfies that standard.

B

National Mining Association also thinks EPA erred in deciding to count “fugitive emissions” of hazardous air pollutants in determining whether a “source” is a “major source,” without first conducting a rulemaking pursuant to § 302(j). “Fugitive emissions” are defined in the final rule as: those emissions from a stationary source that could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Under section 112 of the Act, all fugitive emissions are to be considered in determining whether a stationary source is a major source. 59 Fed. Reg. at 12,433 (*to be codified at* 40 C.F.R. § 63.2).

Section 302(j) of the Act, as interpreted in *Alabama Power v. Costle*, 636 F.2d at 369-70, requires EPA to conduct a separate rulemaking to achieve this result, so the Association contends. This provision, fully quoted in the margin, states that, “[e]xcept as otherwise expressly provided,” a “major stationary source” or “major emitting facility” is any stationary source of air pollutants that “directly emits, or has the potential to emit” at least 100 tons per year of any air pollutant, including “any major . . . source of fugitive emissions . . . as determined by rule by the Administrator.” *Alabama Power* held that EPA could not, without rulemaking, include fugitive emissions of air pollutants in a facility’s aggregate emissions for purposes of determining whether the facility was a “major emitting facility” within § 169(1). 636 F.2d at 368-70. For the prevention of significant deterioration in air quality program, § 169(1) defines “major emitting facility” as any of 28 categories of sources that emit 100 or more tons per year of any air pollutant. For “any other source,” the threshold is 250 or more tons per year. *Id.* Although § 169(1) did “expressly make a substantial modification in the 302(j) definition of ‘major,’ “ it had “no ‘express’ provision modifying section 302(j)’s ‘rule’ requirement as to fugitive emissions.” *Alabama Power*, 636 F.2d at 370. “Therefore under section 169(1) controlled in this respect by section 302(j), the calculation of the threshold quantity emissions may include fugitive emissions only as determined by rule by the Administrator.” 636 F.2d at 370.

Finding this case indistinguishable from *Alabama Power*, National Mining Association spins out the following argument: § 112(a)(1) defines “major source” in terms of a “stationary source or group of stationary sources”; a § 112 major source is thus, “by definition, a ‘major stationary source,’ “ subject to the requirements of § 302(j); § 112(a)(1) does not expressly exempt a major source from § 302(j)’s fugitive emissions rulemaking requirement; therefore,

EPA may not require a source to include fugitive emissions of hazardous air pollutants in the source's total emissions without a § 302(j) rulemaking.

The Association's argument is not very persuasive. *Alabama Power* was decided in the pre-*Chevron* age. Moreover, there is a notable difference between § 302(j) and § 112(a)(1). Section 302(j) speaks of sources that "directly" emit air pollutants, on the one hand, and fugitive emissions on the other, thus suggesting that emissions of the fugitive variety are not direct. By contrast, § 112(a)(1) does not contain the modifier "directly," and it does not mention fugitive emissions as a separate category of emissions. Furthermore, one cannot say that § 302(j) supplies "quantitative terms" for § 112(a)(1)'s definition of "major source," as it did for § 169(1), one of the provisions at issue in *Alabama Power*, 636 F.2d at 369. When it comes to hazardous air pollutants, the quantities—10 tons of any one kind per year or 25 tons of a combination—are specified in § 112(a)(1), not § 302(j), which has a 100-ton threshold.

* * *

We conclude that EPA may require the inclusion of fugitive emissions in a site's aggregate emissions without conducting any special rulemaking, even if "major source" and "major stationary source" mean the same thing. Section 112(a)(1) expressly provides that a "major source" is any stationary source or group of stationary sources "*located within a contiguous area and under common control*" and emitting more than 10 tons per year of a single hazardous air pollutant or 25 tons per year of such pollutants combined. An emission may be fugitive, but it is still an emission from a stationary source. And so the italicized language certainly may be read as EPA reads it—that all emissions are to be counted in determining whether a source is major, subject only to the qualification that they emanate from a contiguous site under common control. So read, § 112(a)(1) satisfies § 302(j)'s "[e]xcept as otherwise expressly provided" clause such that fugitive emissions may be counted in a source's aggregate emissions without a special rulemaking.

C

As noted above, in determining whether a source is to be categorized as a "major source" of emissions (or by default an "area" source), EPA was directed by Congress to calculate the amount of hazardous air pollutants a stationary source "emits or has the potential to emit *considering controls*." Clean Air Act § 112(a)(1) (emphasis added). In its final rule, EPA defined a source's "potential to emit" as its "maximum capacity . . . to emit a pollutant under its physical and operational design." 59 Fed. Reg. at 12,434. To comply with the statutory directive to "consider [] controls" while determining emissions capacities, the rule also provides:

Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount or material combusted, stored, or processed, shall be treated as part of its design *if the limitation or the effect it would have on emissions is federally enforceable*.

Id. (emphasis added). Under the rule, a control is deemed to be "federally enforceable" if it is "enforceable by the Administrator and citizens under the Act or . . . under other statutes administered by the Administrator." *Id.* at 12,433.

Petitioner Chemical Manufacturers Association argues that this restrictive definition—which disregards emissions limitations imposed by state or local regulations not deemed "federally enforceable"—is contrary to the language of § 112(a)(1) of the Act. The

government contends that since the word “controls” is not defined in the statute, it was open to EPA under *Chevron* to define the term, and it has done so reasonably. See *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 843 (1984). According to petitioners, even if *Chevron* Step II is to be reached—because the statute does not reveal a specific congressional intent—we should conclude that EPA’s construction of “controls” is impermissible.

It is common ground that Congress meant the word “controls” to refer to governmental regulations and not, for instance, operational restrictions that an owner might voluntarily adopt. (We note, however, that the word could be read that broadly, which certainly supports the government’s position that the term is not clear on its face.) Petitioners further conceded at oral argument—quite properly, we believe—that Congress intended the term to stand for *effective* controls. EPA clearly is not obliged to take into account controls that are only chimeras and do not really restrain an operator from emitting pollution. Nevertheless, petitioners claim that EPA has imposed the federal enforceability requirement in pursuit of policy objectives unrelated to concerns about the effectiveness of controls imposed at the state and local level. EPA is accused of interpreting the statute so as to pressure states—through the ministrations of sources eager to have local controls counted in determining their capacity to emit under § 112—to seek EPA approval of state emissions policies. This objective, petitioners claim, is no part of § 112’s requirement that controls be considered in determining whether a facility qualifies as a major source. It is an impermissible interpretation since it subordinates the effectiveness of controls to other considerations not approved by Congress.

Although it is the regulations implementing the 1990 amendments to the Clean Air Act which are directly before us, this dispute had its genesis at least a decade earlier. Following the passage of the Clean Air Act Amendments of 1977, the agency took the position that the phrase “potential to emit” as used in the definition of “major emitting facilities” excluded even emissions-reducing equipment, such as scrubbers, filters, and other technologies. See 40 C.F.R. §§ 51.24(b)(3), 52.21(b)(3) (1978). We rejected that position in *Alabama Power*. See 636 F.2d at 353-55. In the wake of that case, EPA proposed a new definition of “potential to emit” that would have taken into account air pollution control equipment, but not operational restraints. See 44 Fed. Reg. 51,924 (1979). The final regulations issued in 1980, however, adopted the position that capacity calculations could factor in operational restraints—but only if they were “federally enforceable.” See 45 Fed. Reg. 52,676, 52,746 (1980). The regulations defined as “federally enforceable” those emissions restrictions that were “enforceable by the Administrator.” *Id.* at 52,737. The requirement of federal enforceability was, EPA explained, “necessary, as a practical matter, to ensure that sources will perform the proper operation and maintenance for the control equipment.” *Id.* at 52,688.

The 1980 rule was challenged in this court, but in a February 1982 settlement, EPA agreed to amend its position on federal enforceability. The proposal that followed would have taken into account emission limits “enforceable under federal, state or local law and discoverable by the Administrator and any other person.” 48 Fed. Reg. 38,742, 38,748, 38,755 (1983). But by the time the final rule was issued, in 1989, the agency had apparently decided to abandon the terms of the settlement. The final regulations reverted to the former position of requiring federal enforceability as the sine qua non for crediting operational restraints. “Federal enforceability” was still defined to reach only those limitations “enforceable by the Administrator,” but this term now included state constraints imposed under federally approved plans. See 54 Fed. Reg. 27,274, 27,285-86 (1989). New litigation followed but the cases were stayed (in our court) in anticipation of the 1990 amendments.

Congress thus acted in 1990 against a backdrop of over a decade of skirmishing between the agency and affected companies, during which the issue of whether and to what extent state

and local controls were to be credited in calculating a source's "potential to emit" was very much in the forefront. In drafting § 112 Congress specifically directed EPA to consider controls in determining which producers should be classified as "major sources," but conspicuously did not limit controls to those that are federally enforceable. The government maintains that since Congress did not specify what kind of controls would qualify, EPA was free to answer that question. It permissibly did so by once again requiring that they had to be "federally enforceable," a term which, in EPA's final manifestation of the concept, applies to "all limitations and conditions that are enforceable by the Administrator and citizens under the Act or that are enforceable under other statutes administered by the Administrator." 54 Fed. Reg. at 12,433.

As we have noted, it is certainly permissible for EPA to have refused to take into account ineffective controls (indeed, it is likely that a contrary interpretation would be impermissible). But is it also open to EPA under the statute to refuse to consider controls on grounds other than their lack of effectiveness? To qualify as "federally enforceable," (as best we can determine) controls are required, in addition to being effective as a practical matter, to have been approved by EPA and integrated into the state implementation plan, or SIP, drawn up by each state to enforce substantive restrictions under the Clean Air Act and submitted to the Administrator for approval under § 110. Once included within the SIP, a state control becomes enforceable not only by the state which is its primary regulating authority, but also by the Administrator under § 113 of Act, and, in certain settings, by private citizens, who can bring suit for noncompliance with federal pollution control programs under § 304.

EPA has identified several state and local regulatory approaches through which states can impose restraints and have them deemed "federally enforceable." Constraints imposed upon a source under a state operating permit, for example, will be deemed "federally enforceable" if the state program has been approved as a "federally enforceable state operating permit program," or FESOPP, by EPA. A state permitting program cannot stand alone; it must be incorporated into the SIP, must impose upon sources a legal obligation to observe the permit constraints, must be enforceable as a practical matter—*i.e.*, must be "effective"—must not be inconsistent with other requirements under the SIP or federal law, and must be issued pursuant to a public hearing process. See 54 Fed. Reg. 27,274, 27,281-82 (1989). Other approaches are available as well. General, as opposed to source-specific, permits can also be issued under a FESOPP, or under a state general permitting program similarly approved for inclusion within the SIP. And a state can impose constraints by general prohibitory or exclusionary rules, so long as they are included within its SIP. Finally, the SIP could be amended to reflect special, source-specific limitations. See Memorandum, Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act, at 2-4 (EPA Jan. 25, 1995).

For each of these regulatory methods, however, EPA has proposed conditions for achieving "federal enforceability" that go beyond the mere effectiveness of particular constraint as a practical matter. Inclusion in the SIP, for example, is required in each instance even though EPA's own approach suggests that it is a consideration independent of and in addition to the need that a constraint be effective for it to count towards reductions. There may, moreover, be regulatory techniques in addition to those that EPA deems susceptible to "federal enforceability" that are equally effective, and yet which are foreclosed as mechanisms for reducing a source's capacity to emit as a result of EPA's approach.

What EPA has not explained is how its refusal to consider limitations other than those that are "federally enforceable" serves the statute's directive to "consider[] controls" when it results in a refusal to credit controls imposed by a state or locality even if they are unquestionably effective. Under EPA's regime, even a state program of unassailable

effectiveness would not qualify in computing a source's capacity to emit unless it had been submitted not only for EPA approval, but also for inclusion in the SIP. In doing so, EPA would sacrifice a statutory objective in pursuit of ends that, at least as presented in argument to us, have not been justified, either in terms of § 112 or other provisions of the Act. EPA has not explained why it is essential that a control be included within a SIP. It is not apparent why a state's or locality's controls, when demonstrably effective, should not be credited in determining whether a source subject to those controls should be classified as a major or area source.

* * *

In sum, EPA's definition of "major source" without respect to source categories or two-digit SIC codes is reasonable, as is its requirement that fugitive emissions be included in a source's aggregate emissions in determining whether the source is major. We therefore deny the petition for review with respect to these issues, advanced here by petitioners General Electric, National Mining Association and American Forest and Paper Association. However, EPA has not explained why the criteria for federal approval and the consequences of that approval are related to ensuring the practical effectiveness of state controls such that the set of controls considered under § 112 should be limited in that fashion. We therefore grant the petition for review with respect to the challenge raised by Chemical Manufacturers Association and American Petroleum Institute.

NOTES

1. The hazardous air pollution program alone will add tens of thousands of sources to the new permit program. Some of the sources covered by the program, like fuel combustion sources, metals processing sources, and petroleum refineries may seem obvious. Others, however, are more surprising, and include certain synthetic fiber producers, yeast manufacturers, vegetable oil producers, and dry cleaners. *See* 57 Fed. Reg. 31591-92 (1992).
2. Under an EPA policy memorandum, a source wanting to avoid "major source" status can do so by reducing their "potential to emit" below the major source threshold any time before the first compliance date contained in an applicable MACT standard. Memorandum from John Seitz, EPA Office of Air Quality Planning and Standards, May 16, 1995, to EPA Regional Offices, *reported in* BNA ENV'T REP., Current Developments 243 (1995).
3. In addition to substantive obligations imposed by the Clean Air Act, the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRTKA), 42 U.S.C. §§ 11,001-11,050, imposes reporting requirements on certain manufacturing facilities with 10 or more full-time employees which manufacture or process more than 25,000 pounds or use more than 10,000 pounds of certain listed chemicals in any calendar year. 40 C.F.R. § 11,002 (1996). Facilities subject to EPCRTKA must submit "material safety data sheets" for each chemical subject to the statute's reporting requirements. 42 U.S.C. § 11,021(a)(1). The EPA maintains a database called the "Toxics Release Inventory" which provides the public with information about release of toxic chemicals into the environment from these factors.
4. Following the decision in the *National Mining Association*, the D.C. Circuit remanded the comparable PTE definition in the PSD and New Source Review regulations and vacated the federal enforceability requirement contained in those rules. *Chemical*

Manufacturers Association v. EPA, 315 U.S. App. D.C. 76 (D.C. Cir. 1995) (*unpublished disposition*). In January, 1996, the EPA established an interim policy pending rulemaking which defines “potential to emit” to mean “federally enforceable or legally and practicably enforceable by a state or local air pollution control agency.” *EPA Interim Policy on Federal Enforceability Requirement for Limitations on Potential to Emit*, January, 1996. [Http://epa.gov/ttncaaa1/title5/pte122.pdf](http://epa.gov/ttncaaa1/title5/pte122.pdf).

4. Consider the manner in which the 1990 amendments address the issue of risk in Phase II of the regulatory program. Assuming Congress does not amend the law, the agency must reduce the lifetime excess cancer risk to the most exposed individual to less than one in one million. If the most exposed person has less than a one in one million risk of contracting cancer, what is the likely risk to the average person? Are the Phase II standards good policy? Consider this question as you read the following article.

DISCERNIBLE RISK—A PROPOSED STANDARD FOR SIGNIFICANT RISK IN CARCINOGEN REGULATION

CROSS, BYRD & LAVE, 43 ADMIN. L. REV. 61 (1991)

I. INTRODUCTION

Society’s concerns about carcinogenic chemicals have led to the creation of several federal regulatory agencies and many statutes. Yet two decades of regulatory attempts to manage known or suspect carcinogens have led only to a morass of standards, goals and procedures. These standards and goals lack consistency across agencies and often even within a single agency. As a result, the regulatory fate of any substance, or even an industry, depends on the unpredictable vagaries of circumstances and individual decisionmakers.

The current morass accrues advantages only to lobbyists and power brokers. It delays innovation, increases the costs of doing business, and leaves workers and consumers with less protection than could easily be made available. In our judgment, improving the management of carcinogens and potential carcinogens requires articulation of a clear definition of what constitutes a “significant risk worth regulating.” We will explore the need for defining significant risk, examine some proposed approaches, and present our own suggested standard.

II. THE NEED FOR SIGNIFICANT RISK THRESHOLDS IN REGULATION

Traditionally, government regulation of certain threats to public health employed standards of “unreasonable risk” or “reasonable probability of harm.” Congress and the regulators understood that regulation needed to strike a balance between purity and economics—weighing, for example, the riskiness of food due to natural contaminants such as insect parts, rodent feces, or aflatoxin against the consequences of extra cost and reduced quantities or variety of food. Public health would not be improved by regulations that ensured that food was pure if that meant that little food was available at a very high price. While Food and Drug Administration (FDA) decisions provoked an occasional controversy, the system largely worked.

In contrast, people were so concerned about contracting cancer that Congress rushed to adopt Representative Delaney’s infamous amendment in 1958. This amendment prohibited any food additive that had been shown to induce cancer in humans or laboratory animals. In that era, when only a dozen or so carcinogens were seen in only a few products or places, the

Delaney Amendment made some sense. However, today there are more than six hundred substances shown to be carcinogenic in rodents, and these substances can be detected (in minute concentrations) nearly anywhere one looks. Under these circumstances, adherence to the Delaney Clause zero-risk approach now constitutes “a pernicious guide to regulators confronted with complicated problems.”

The government faces particularly intractable problems in regulating today’s hazardous pollutants, especially the putative carcinogens. Continued scientific uncertainty about the mechanisms of cancer development and cancer’s long latency period make it difficult to discover causes of cancer in humans. Consequently, scientists and regulators generally rely on animal tests, which create a host of additional questions about test protocols and extrapolation to humans.

The greatest difficulty facing regulators, however, might be referred to as the “carcinogen dilemma.” The first prong of the dilemma arises from the no-threshold hypothesis for carcinogens. Science has been unable to demonstrate the existence of a safe threshold of exposure for carcinogens. Regulators presume that *any* exposure to a carcinogen presents at least some risk of cancer, even though that risk may be minuscule, such as one-in-one million or less. Courts have endorsed this no-threshold assumption, observing that “[c]urrent scientific knowledge does not permit a finding that there is a completely safe level of human exposure to carcinogenic agents.” The Delaney Clause, zero-risk approach to carcinogens in the environment would ban entirely discharges of all carcinogens.

This Delaney Clause approach is unrealistic, however, due to the second prong of the dilemma—at least some carcinogenic substances are essential to modern society. Literal application of the zero-risk paradigm would require the government “to shut down every manufacturing operation in the nation,” which, of course, neither the Environmental Protection Agency (EPA) nor Congress would ever attempt to do, even in the name of cancer prevention. Many federal agency scientists tend to ignore the zero-risk paradigm for carcinogens. Unfortunately, elected officials find the rhetoric of zero risk appealing. When statutory or regulatory language mouths such a commitment to zero risk, it creates more insidious risks to public health. Devotion to the unrealistic zero risk paradigm deters the issuance of necessary public health regulations and distracts regulators from pressing health concerns, with little countervailing benefit.

* * *

III. THE LEGAL CONTEXT OF SIGNIFICANT RISK THRESHOLDS

* * *

The seminal decision in carcinogen regulation is the Supreme Court’s holding in *Industrial Union Department, AFL-CIO v. American Petroleum Institute*, which is commonly known as the *Benzene* decision. While this decision did not invent the concept of significant risk, it thrust the concept of a significant risk threshold into the forefront of regulatory attention. Moreover, the *Benzene* decision established a potentially broad foundation for using a significant risk test throughout federal regulation of carcinogens and other hazardous substances.

In *Benzene*, the Court reviewed OSHA’s decision to reduce the occupational exposure to benzene from ten ppm (parts per million) to one ppm, a level selected as the lowest feasible in the workplace. The case presented squarely the carcinogen dilemma—benzene was an economically important petroleum product that rather clearly caused cancer at high exposure levels. Relying on the no-threshold hypothesis, OSHA declared that no level benzene exposure was safe and presented no risk assessment to justify the standard. In Justice Steven’s words:

OSHA's rationale for lowering the permissible exposure limit to 1 ppm was based, not on any finding that leukemia has ever been caused by exposure to 10 ppm of benzene and that it will not be caused by exposure to 1 ppm, but rather on a series of assumptions indicating that some leukemias might result from exposure to 10 ppm and that the number of cases might be reduced by reducing that exposure level to 1 ppm.

The American Petroleum Institute and other industry representatives challenged OSHA's standard as unnecessary and as having social costs that exceeded its social benefits.

After carefully analyzing the language of the Occupational Safety and Health Act, the Court emphasized that words such as "safe" did not necessarily mean "absolutely risk free," notwithstanding common dictionary definitions. Rather, the Act was intended "to require the elimination, as far as feasible, of *significant risks* of harm."

* * *

After establishing the requirement of a significant risk standard for OSHA, the Court implicitly recognized that the phrase "significant risk" can be as vague and undefined as any existing regulatory test. Consequently, the Court sketched out the meaning of a significant risk, for OSHA at a minimum. First, the Court ruled that the agency has the burden of proof to demonstrate the significance of a risk. Second, the Court emphasized that this burden was not a terribly onerous one. The agency need not prove significant risk "with anything approaching scientific certainty." Rather, "so long as they are supported by a body of reputable scientific thought, the Agency is free to use conservative assumptions in interpreting the data with respect to carcinogens, risking error on the side of overprotection rather than under protection." In essence, the Court's decision enabled agencies to conduct a plausible scientific risk assessment that may err on the side of conservatism.

Once the magnitude of carcinogenic risk is assessed, the Court granted the agency considerable discretion in determining whether that risk is "significant," emphasizing that any such determination would be "based largely on policy considerations." The Court provided little substantive guidance on its own view of risk significance, but it did state that a one in one thousand risk of cancer from air pollution might reasonably be considered significant, whereas a one in one billion risk of cancer from drinking chlorinated water "clearly could not be considered significant."

C. The *Vinyl Chloride* Decision

The second most prominent decision involving significant risk thresholds in carcinogen regulation is that of the United States Court of Appeals for the District of Columbia Circuit in *Natural Resources Defense Council v. EPA*, often referred to as the *Vinyl Chloride* decision. The *Vinyl Chloride* decision pointedly extended the holdings of the *Benzene* decision beyond the Occupational Safety and Health Act to the Clean Air Act and carved out a major role for significant risk analysis in the regulation of hazardous air pollutants.

In *Vinyl Chloride*, EPA had rejected the zero-risk paradigm and had based its vinyl chloride air emissions regulation on the feasibility and relative costs and benefits of controls. The court overturned this standard and held that the language of the Clean Air Act required a health-based standard and that cost or feasibility considerations were irrelevant in defining the necessary level of health production. In addition, the court elaborated on the permissible considerations and appropriate procedures for setting hazardous air pollutant standards under section 112 of the Clean Air Act.

The court rejected a zero-risk interpretation of the Act, finding it contrary to congressional intent. Citing *Benzene*, the court wrote:

Congress' use of the word "safety," moreover, is significant evidence that it did not intend to require the Administrator to prohibit all emissions of non-threshold pollutants. As the Supreme Court has recently held, "safe" does not mean "risk-free." Instead, something is "unsafe" only when it threatens humans with "a significant risk of harm."

Thus, the EPA Administrator must make "an expert judgment with regard to the level of emission that will result in an "acceptable' risk to health." As in *Benzene*, the court recognized the agency's broad discretion in making such a determination and emphasized that "it is not the court's intention to bind the Administrator to any specific method of determining what is 'safe' or what constitutes an 'ample margin.'" The court gave virtually no substantive guidance regarding risk significance but observed that many activities involving a risk of death are considered "acceptable in the world in which we live."

D. Other Significant Risk Decisions

While *Benzene* and *Vinyl Chloride* are landmark decisions mandating a significant risk test for carcinogen regulation, a number of other cases have grappled with the issue of what risks are legally significant. Courts have reviewed a number of OSHA standards under the Supreme Court's significant risk requirement. In reviewing OSHA's asbestos standard, a court affirmed that a risk of forty-four extra cancer deaths per thousand could be significant. Upon review of OSHA's standard for ethylene oxide, the court accepted that twelve to twenty-three excess deaths per ten thousand would be significant. Review of OSHA's arsenic standard observed that 2.2 excess deaths per thousand "easily exceeds the excess risk of one per thousand that the Supreme Court stated 'a reasonable person might well consider . . . significant.'" Although none of the courts elaborated on standards for risk significance, an overriding theme in their decisions is judicial recognition of the broad discretion accorded OSHA in deciding what risks should be considered significant.

Perhaps the most extensive judicial analysis of significant risk is found in dicta in the D.C. Circuit's analysis of the Delaney Clause. Describing risks below one-in-one million, the court found it "altogether correct to characterize these risks as trivial." As the court elaborated:

[A] consumer would run a one-in-a-million lifetime risk of cancer if he or she ate *one* peanut with the FDA-permitted level of aflatoxins once every 250 days (liver cancer). Another activity posing a one-in-a-million lifetime risk is spending 1,000 minutes (less than 17 hours) every year in the city of Denver—with its high elevation and cosmic radiation levels—rather than in the District of Columbia. Most of us would not regard these as high-risk activities. Those who indulge in them can hardly be thought of as living dangerously. Indeed, they are risks taken without a second thought by persons whose economic position allows them a broad range of choice . . .

. . . [A] person would have to be exposed to more than 2,000 chemicals bearing the one-in-a-million lifetime risk, at the rates assumed in the risk assessment, in order to reach 100th the risk involved in smoking.

* * *

At best, the decisions may suggest that a significant risk lies somewhere between one in one million and one in one thousand. This leaves quite a broad range, and courts have made it clear that the significant risk determination is within agency discretion. Moreover, the courts have not considered other important issues, such as whether agencies should rely on average

or maximum individual risk. As a result, regulators still have a relatively clean slate upon which to determine risk significance.

IV. IDENTIFYING THE CHARACTERISTICS OF RISK SIGNIFICANCE

Before determining the magnitude of cancer risk that should be considered significant, we must identify the characteristics by which risk significance is to be measured. The first task is to settle upon a “currency” of risk—some internally consistent measure of risk quantity. Second, we must consider external factors, beyond the simple quantity of risk, that may influence the decision on risk significance.

In selecting a currency of risk, we can choose from among at least four alternatives:

1. *average lifetime (or perhaps annual) risk* (a measure of the probability of incurring cancer for the average member of the exposed population, usually expressed in probabilistic terms, such as 1×10^{-5});
2. *maximum lifetime (or perhaps annual) risk* (a measure of the probability of incurring cancer for the maximally exposed member or subgroup of the exposed population, usually expressed in probabilistic terms, such as 1×10^{-4});
3. *annual expected cancers* (a measure of the additional number of cancers to be expected each year in the exposed population, expressed in numeric terms, such as twelve cancers); or
4. *reduced life expectancy* (a measure of the average life expectancy lost due to cancer in the exposed population, expressed in terms of time, such as thirty-five hundred hours).

Each of these potential currencies for risk has its benefits and drawbacks. Initially, we may dismiss reduced life expectancy as a comparative test for regulating carcinogens. Because the delay between first exposure to a carcinogen and the onset of cancer usually is measured in decades, death from cancer is arguably less of a concern than death from an auto crash, which often kills early in life. A notable exception occurs with children exposed to a leukemogen, since the latency period for leukemia is relatively short. While the life expectancy measure is able to compare different types of hazards, such as carcinogen exposures and household accidents, reduced life expectancy contributes little to comparisons between types of carcinogens.

The remaining three currencies each possess some merit. Average lifetime risk reflects the average hazard that most individuals face; this measure is most frequently referenced in court decisions on significant risk. Maximum lifetime risk reflects the hazard that might be posed to a highly exposed individual; this measure recognizes our traditional concern for the welfare of each individual. Total population risk reflects the magnitude of the risk to the entire exposed population and is most relevant if our concern is the absolute reduction of deaths due to cancer. Fortunately, we need not make a definitive choice among these currencies but can define risk significance so as to encompass consideration of each measure.

The selection of risk currency does not permit regulators to establish an inviolable level of significant risk. Other features should play some role in significant risk determinations. First, the degree of confidence in the underlying scientific finding of carcinogenicity should be considered. While risk assessments of two different substances may present the same estimate of risk, one may be based upon unfounded human epidemiological evidence of carcinogenicity, while the other may be based upon cautious and debatable extrapolations from a limited animal bioassay. The threat presented by the first substance is more certain.

Second, the exposure estimates (part of the risk calculation) can vary greatly in accuracy. Some exposure estimates are based on actual measurements, in contrast to the maximally exposed individual whose exposure is hypothetical and often unrealistic. Under the Clean Air

Act, the maximally exposed individual has been defined as an implausible imaginary person who lives twenty-four hours a day for seventy years at the downwind fence line of a plant.

Third, the context of a risk bears upon its significance. For example, higher risks may be acceptable for occupational exposures to carcinogens than for public environmental exposures. Other types of risks, such as large-scale, catastrophic risks, may be particularly feared by the American public, and a significant risk test might consider such public preferences.

Fourth, the level of risk deemed significant may depend on the type of regulatory restriction under contemplation. When reviewing a standard requiring medical surveillance of workers exposed to cotton dust, a federal appellate court ruled that "*Benzene* dictates a significant risk analysis for monitoring requirements considerably laxer than for other workplace standards." Perhaps the significant risk threshold should be lower for less burdensome and costly types of regulation. A similar interpretation in *Vinyl Chloride* led to the conclusion that consideration of cost and feasibility may be incorporated when selecting the size of the margin of safety required under the Clean Air Act once an exclusively health-based standard has been met.

* * *

VI. THE DISCERNIBLE RISK STANDARD

Identifying any risk, especially a significant risk, has its basis in the physical concept of a manifest, observable, or detectable event. Interpreting the meaning of some observed events, however, is extremely difficult. For example, suppose that one worker in a particular plant or one person in a community contracts cancer. Do these occurrences mean that the workers or residents are being exposed to a chemical carcinogen?

Unfortunately, many workers and consumers contract cancer daily, and the vast majority of these unfortunate events are unrelated to environmental carcinogens in the workplace or community. The popular notion is that some workplaces are so dangerous that the cancer would be endemic, as occurred, for example, with men working on top of coke ovens for longer than a decade or asbestos insulation workers. In these cases, there is no question that something must be done as promptly as possible.

Once these obvious cases have been resolved, what remains are cases where the effects are more subtle. The United States has tens of thousands of plants that employ fifty or more workers. In which of these plants are workers exposed to significant amounts of carcinogens? Current data allow, with some difficulty, a compilation of the incidence of cancer among present and past workers. With a bit of work, the expected incidence of cancer can be calculated. The incidence of cancer is related to genetic inheritance, diet, tobacco use, sexual behavior, and occupational exposure, among other factors. The workers in one plant might have less healthy diets, or more of them might smoke or otherwise increase the incidence of cancer in a way unrelated to occupational exposures. Epidemiologists attempt to control for these other factors when examining the incidence of cancer in a workplace. In addition, the incidence of cancer seems to have a large random component, which suggests that scientists do not understand all the causes of cancer.

If all workplaces in the United States were surveyed, just under half would have cancer incidences greater than the median. If the survey were repeated in the following year, again just under half of the workplaces would have more cancer than the median, but the set of plants would be somewhat different. A plant whose number of cancer incidences was high in one year and low in the next probably would not have exposed workers to high levels of carcinogens. It follows that, if OSHA tried to regulate all plants that had a higher than median incidence of cancer in one year, it would squander its resources and the nation's resources.

Since many of these plants would be found to have a lower than median incidence in the following year even absent increased regulation, arguably there would be little reason to be alarmed.

Epidemiologists use the criterion of “statistical significance” to decide when the elevated incidence of cancer is unlikely to have occurred by chance. While there is the possibility that a plant exposing workers to low levels of carcinogens might not lead to a statistically significant increase in cancer, that plant’s cancer increase would be relatively small. The level of statistical significance is an attempt to balance the number of cases where the plant was indicted for exposing its workers to carcinogens (although this was not true) against the number of cases where the plant was missed, even though it did expose workers to carcinogens.

The ability to detect a “significant” increase in some cancer rate is related to the total incidence of disease and the size of the population. For example, the cancer death rate in the United States population is about 20 percent. Among a population of one hundred people, twenty of them would be expected to die of cancer, but it would not be surprising if the observed number of cancer deaths were anywhere between twelve and twenty-eight, due to chance. Only if the number of cancer deaths were twenty-nine or greater would it be unlikely (less than one chance in twenty) that the population was not uniquely exposed to any carcinogen. Similarly, if the population in question were ten thousand people, the number of cases of cancer would have to be greater than 2,080 before the numbers indicated that it was unlikely that this number of cancers came from an ordinary group that was not exposed to a carcinogen. In a small population, the observed number of cancers would have to be at least 45 percent greater than the expected number (20 percent) before it would be taken seriously by biostatisticians. In a larger population, the increase need only be slightly greater than 4 percent over the expected percentage to be taken seriously.

If the type of cancer were extremely unusual, observation of even a single case would be likely to raise suspicions and observation of two cases would be likely to be sufficient to indicate the presence of a carcinogen. For example, when several cases of angiosarcoma of the liver, an extremely rare cancer, were found among the workers at a B.F. Goodrich plant that made vinyl plastic, epidemiologists knew immediately that there was a problem.

* * *

The two examples above suggest that the intrinsic ability to discern a risk to the individual varies with the size of the population (among other factors). If we expect twenty cases in a population of one hundred and statisticians would attribute any increase less than twenty-eight cases to chance, the lowest discernible individual risk is approximately $8/100$ or 8×10^{-2} . In a population of ten thousand people, however, the lowest discernible cancer risk from the same exposure would be $80/10,000$ or 8×10^{-3} . Risks lower than these could not be detected from a lifetime study of the population.

All other things being equal, the ability to discern the difference between an increase in individual risk and chance fluctuation in background incidence will increase as population size increases. This scientific barrier to the detection of smaller increases in individual risk means neither that small risks are absent nor that small risk increases cannot be an appropriate subject of social concern. It does mean, however, that the smaller risks cannot be said to be *significant* in a statistical sense.

* * *

[The authors conclude that federal agencies should regulate only those cases where the agency detects a statistically significant risk.]

PROBLEM #6: TECHNOLOGY-BASED STANDARDS

Match the technology-based standard that applies to the source. (More than one standard may apply to any given source.)

<i>SOURCE</i>	<i>STANDARD</i>
a. A new petroleum refinery in a PSD area that will emit 200 tons of SO ₂ , 150 tons of particulate matter, and 150 tons of CO each year. This facility will also emit currently unknown amounts of toluene and benzene each year.	BACT BART GACT
b. A new magnetic tape coating facility in a PSD area that will emit 200 tons of VOCs per year.	LAER
c. A new magnetic tape coating facility in a severe ozone nonattainment area which will emit 50 tons of VOCs each year.	MACT
d. An existing coal-fired power plant (built in 1965) which emits 25,000 tons of SO ₂ , 10,000 tons of NO _x and 20,000 tons of particulate matter each year and is located in a PSD area. This facility will emit currently unknown amounts of arsenic and lead.	NSPS
e. An existing coal-fired power plant (as described at (d) above) in a SO ₂ nonattainment area.	RACT

E. The Emissions Trading Program

CHEVRON U.S.A., INC. v. NATURAL RESOURCES DEFENSE COUNCIL
467 U.S. 837 (1984)

Justice STEVENS delivered the opinion of the Court.

In the Clean Air Act Amendments of 1977, Pub.L. 95-95, 91 Stat. 685, Congress enacted certain requirements applicable to States that had not achieved the national air quality standards established by the Environmental Protection Agency (EPA) pursuant to earlier legislation. The amended Clean Air Act required these "nonattainment" States to establish a permit program regulating "new or modified major stationary sources" of air pollution. Generally, a permit may not be issued for a new or modified major stationary source unless several stringent conditions are met. The EPA regulation promulgated to implement this permit requirement allows a State to adopt a plant-wide definition of the term "stationary source." Under this definition, an existing plant that contains several pollution-emitting devices may install or modify one piece of equipment without meeting the permit conditions if the alteration will not increase the total emissions from the plant. The question presented by this case is whether EPA's decision to allow States to treat all of the pollution-emitting devices within the same industrial grouping as though they were encased within a single "bubble" is based on a reasonable construction of the statutory term "stationary source."

I

The EPA regulations containing the plant-wide definition of the term stationary source were promulgated on October 14, 1981. 46 Fed. Reg. 50,766. Respondents filed a timely petition for review in the United States Court of Appeals for the District of Columbia Circuit pursuant to § 307(b)(1). The Court of Appeals set aside the regulations. *National Resources Defense Council, Inc. v. Gorsuch*, 685 F.2d 718 (D.C. Cir. 1982).

The court observed that the relevant part of the amended Clean Air Act “does not explicitly define what Congress envisioned as a ‘stationary source’, to which the permit program . . . should apply,” and further stated that the precise issue was not “squarely addressed in the legislative history.” 685 F.2d at 723. In light of its conclusion that the legislative history bearing on the question was “at best contradictory,” it reasoned that “the purposes of the nonattainment program should guide our decision here.” 685 F.2d at 726, n. 39. Based on two of its precedents concerning the applicability of the bubble concept to certain Clean Air Act programs, the court stated that the bubble concept was “mandatory” in programs designed merely to maintain existing air quality, but held that it was “inappropriate” in programs enacted to improve air quality. 685 F.2d at 726. Since the purpose of the permit program—its “*raison d’etre*,” in the court’s view—was to improve air quality, the court held that the bubble concept was inapplicable in this case under its prior precedents. *Ibid*. It therefore set aside the regulations embodying the bubble concept as contrary to law. We granted certiorari to review that judgment, 461 U.S. 956 (1983), and we now reverse.

The basic legal error of the Court of Appeals was to adopt a static judicial definition of the term stationary source when it had decided that Congress itself had not commanded that definition. Respondents do not defend the legal reasoning of the Court of Appeals.⁷ Nevertheless, since this Court reviews judgments, not opinions, we must determine whether the Court of Appeals’ legal error resulted in an erroneous judgment on the validity of the regulations.

II

When a court reviews an agency’s construction of the statute which it administers, it is confronted with two questions. First, always, is the question whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress. If, however, the court determines Congress has not directly addressed the precise question at issue, the court does not simply impose its own construction on the statute, as would be necessary in the absence of an administrative interpretation. Rather, if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency’s answer is based on a permissible construction of the statute.

“The power of an administrative agency to administer a congressionally created . . . program necessarily requires the formulation of policy and the making of rules to fill any gap left, implicitly or explicitly, by Congress.” *Morton v. Ruiz*, 415 U.S. 199, 231 (1974). If

⁷ Respondents argued below that EPA’s plant-wide definition of stationary source is contrary to the terms, legislative history, and the purposes of the amended Clean Air Act. The court below rejected respondents argument based on the language and legislative history of the Act. It did agree with respondents contention that the regulations were inconsistent with the purposes of the Act, but did not adopt the construction of the statute advanced by the respondents here. Respondents rely on the arguments rejected by the Court of Appeals in support of the judgment, and may rely on any ground that finds support in the record. See *Ryerson v. United States*, 312 U.S. 405, 408 (1941); *LeTulle v. Scofield*, 308 U.S. 415, 421 (1940); *Langnes v. Green*, 282 U.S. 531, 533-539 (1931).

Congress has explicitly left a gap for the agency to fill, there is an express delegation of authority to the agency to elucidate a specific provision of the statute by regulation. Such legislative regulations are given controlling weight unless they are arbitrary, capricious, or manifestly contrary to the statute. Sometimes the legislative delegation to an agency on a particular question is implicit rather than explicit. In such a case, a court may not substitute its own construction of a statutory provision for a reasonable interpretation made by the administrator of an agency.

* * *

IV

The Clean Air Act Amendments of 1977 are a lengthy, detailed, technical, complex, and comprehensive response to a major social issue. A small portion of the statute—91 Stat. 745-751 (Part D of Title I of the amended Act, §§ 171-178)—expressly deals with nonattainment areas. The focal point of this controversy is one phrase in that portion of the Amendments.

Basically, the statute required each State in a nonattainment area to prepare and obtain approval of a new SIP by July 1, 1979. In the interim those States were required to comply with the EPA's interpretative ruling of December 21, 1976. 91 Stat. 745. The deadline for attainment of the primary NAAQS's was extended until December 31, 1982, and in some cases until December 31, 1987, but the SIP's were required to contain a number of provisions designed to achieve the goals as expeditiously as possible.

Most significantly for our purposes, the statute provided that each plan shall:

(6) require permits for the construction and operation of new or modified major stationary sources in accordance with section 173. . . . 91 Stat. 747.

Before issuing a permit, § 173 requires the state agency to determine that (1) there will be sufficient emissions reductions in the region to offset the emissions from the new source and also to allow for reasonable further progress toward attainment, or that the increased emissions will not exceed an allowance for growth established pursuant to § 172(b)(5); (2) the applicant must certify that his other sources in the State are in compliance with the SIP, (3) the agency must determine that the applicable SIP is otherwise being implemented, and (4) the proposed source complies with the lowest achievable emission rate (LAER).

The 1977 Amendments contain no specific reference to the "bubble concept." Nor do they contain a specific definition of the term "stationary source," though they did not disturb the definition of "stationary source" contained in § 111(a)(3), applicable by the terms of the Act to the NSPS program. Section 302(j), however, defines the term "major stationary source" as follows:

(j) Except as otherwise expressly provided, the terms "major stationary source" and "major emitting facility" mean any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator). 91 Stat. 770.

V

The legislative history of the portion of the 1977 Amendments dealing with nonattainment areas does not contain any specific comment on the "bubble concept" or the question whether a plant-wide definition of a stationary source is permissible under the permit program. It does, however, plainly disclose that in the permit program Congress sought to accommodate the conflict between the economic interest in permitting capital improvements to continue and the environmental interest in improving air quality. Indeed, the House

Committee Report identified the economic interest as one of the “two main purposes” of this section of the bill. It stated:

Section 117 of the bill, adopted during full committee markup establishes a new section 127 of the Clean Air Act. The section has two main purposes: (1) to allow reasonable economic growth to continue in an area while making reasonable further progress to assure attainment of the standards by a fixed date; and (2) to allow States greater flexibility for the former purpose than EPA’s present interpretative regulations afford.

The new provision allows States with nonattainment areas to pursue one of two options. First, the State may proceed under EPA’s present ‘tradeoff’ or ‘offset’ ruling. The Administrator is authorized, moreover, to modify or amend that ruling in accordance with the intent and purposes of this section.

The State’s second option would be to revise its implementation plan in accordance with this new provision. H.R. Rep. No. 95-294, p. 211 (1977), U.S.Code Cong. & Admin.News 1977, pp. 1077, 1290.

* * *

VI

As previously noted, prior to the 1977 Amendments, the EPA had adhered to a plant-wide definition of the term “source” under a NSPS program. After adoption of the 1977 Amendments, proposals for a plant-wide definition were considered in at least three formal proceedings.

In January 1979, the EPA considered the question whether the same restriction on new construction in nonattainment areas that had been included in its December 1976 ruling should be required in the revised SIP’s that were scheduled to go into effect in July 1979. After noting that the 1976 ruling was ambiguous on the question “whether a plant with a number of different processes and emission points would be considered a single source,” 44 Fed. Reg. 3276 (1979), the EPA, in effect, provided a bifurcated answer to that question. In those areas that did not have a revised SIP in effect by July 1979, the EPA rejected the plant-wide definition; on the other hand, it expressly concluded that the plant-wide approach would be permissible in certain circumstances if authorized by an approved SIP. It stated:

Where a state implementation plan is revised and implemented to satisfy the requirements of Part D, including the reasonable further progress requirement, the plan requirements for major modifications may exempt modifications of existing facilities that are accompanied by intrasource offsets so that there is no net increase in emissions. The agency endorses such exemptions, which would provide greater flexibility to sources to effectively manage their air emissions at least cost. *Ibid.*

In April, and again in September 1979, the EPA published additional comments in which it indicated that revised SIP’s could adopt the plant-wide definition of source in nonattainment areas in certain circumstances. *See id.*, at 20,372, 20,379, 51,951, 51,924, 51,958. On the latter occasion, the EPA made a formal rulemaking proposal that would have permitted the use of the “bubble concept” for new installations within a plant as well as for modifications of existing units. It explained:

“Bubble” Exemption: The use of offsets inside the same source is called the “bubble.” EPA proposes use of the definition of “source” (*see above*) to limit the use of the bubble under nonattainment requirements in the following respects:

- i. Part D SIPs that include all requirements needed to assure reasonable further progress and attainment by the deadline under section 172 and that are

being carried out need not restrict the use of a plant-wide bubble, the same as under the PSD proposal.

ii. Part D SIPs that do not meet the requirements specified must limit use of the bubble by including a definition of “installation” as an identifiable piece of process equipment.

Significantly, the EPA expressly noted that the word “source” might be given a plant-wide definition for some purposes and a narrower definition for other purposes. It wrote:

Source means any building structure, facility, or installation which emits or may emit any regulated pollutant. “Building, structure, facility or installation” means plant in PSD areas and in nonattainment areas except where the growth prohibitions would apply or where no adequate SIP exists or is being carried out. *Id.*, at 51925.

The EPA’s summary of its proposed ruling discloses a flexible rather than rigid definition of the term “source” to implement various policies and programs:

In summary, EPA is proposing two different ways to define source for different kinds of NSR programs:

(1) For PSD and complete Part D SIPs, review would apply only to plants, with an unrestricted plant-wide bubble.

(2) For the offset ruling, restrictions on construction, and incomplete Part D SIPs, review would apply to both plants and individual pieces of process equipment, causing the plant-wide bubble not to apply for new and modified major pieces of equipment.

In addition, for the restrictions on construction, EPA is proposing to define “major modification” so as to prohibit the bubble entirely. Finally, an alternative discussed but not favored is to have only pieces of process equipment reviewed, resulting in no plant-wide bubble and allowing minor pieces of equipment to escape NSR regardless of whether they are within a major plant. *Id.*, at 51,934.

In August 1980, however, the EPA adopted a regulation that, in essence, applied the basic reasoning of the Court of Appeals in this case. The EPA took particular note of the two then—recent Court of Appeals decisions, which had created the bright-line rule that the bubble concept should be employed in a program designed to maintain air quality but not in one designed to enhance air quality. Relying heavily on those cases, EPA adopted a dual definition of “source” for nonattainment areas that required a permit whenever a change in either the entire plant, or one of its components, would result in a significant increase in emissions even if the increase was completely offset by reductions elsewhere in the plant. The EPA expressed the opinion that this interpretation was “more consistent with congressional intent” than the plant-wide definition because it “would bring in more sources or modifications for review” 45 Fed. Reg. 52,697 (1980), but its primary legal analysis was predicated on the two Court of Appeals decisions.

In 1981 a new administration took office and initiated a “Government-wide reexamination of regulatory burdens and complexities.” 46 Fed. Reg. 16,281. In the context of that review, the EPA reevaluated the various arguments that had been advanced in connection with the proper definition of the term “source” and concluded that the term should be given the same definition in both nonattainment areas and PSD areas.

In explaining its conclusion, the EPA first noted that the definitional issue was not squarely addressed in either the statute or its legislative history and therefore that the issue involved an agency “judgment as how to best carry out the Act.” *Ibid.* It then set forth several

reasons for concluding that the plant-wide definition was more appropriate. It pointed out that the dual definition “can act as a disincentive to new investment and modernization by discouraging modifications to existing facilities” and “can actually retard progress in air pollution control by discouraging replacement of older, dirtier processes or pieces of equipment with new, cleaner ones.” *Ibid.* Moreover, the new definition “would simplify EPA’s rules by using the same definition of ‘source’ for PSD, nonattainment new source review and the construction moratorium. This reduces confusion and inconsistency.” *Ibid.* Finally, the agency explained that additional requirements that remained in place would accomplish the fundamental purposes of achieving attainment with NAAQ’s as expeditiously as possible. These conclusions were expressed in a proposed rulemaking in August 1981 that was formally promulgated in October. *See id.*, at 50,766.

VII

In this Court respondents expressly reject the basic rationale of the Court of Appeals’ decision. That court viewed the statutory definition of the term “source” as sufficiently flexible to cover either a plant-wide definition, a narrower definition covering each unit within a plant, or a dual definition that could apply to both the entire “bubble” and its components. It interpreted the policies of the statute, however, to mandate the plantwide definition in programs designed to maintain clean air and to forbid it in programs designed to improve air quality. Respondents place a fundamentally different construction on the statute. They contend that the text of the Act requires the EPA to use a dual definition—if either a component of a plant, or the plant as a whole, emits over 100 tons of pollutant, it is a major stationary source. They thus contend that the EPA rules adopted in 1980, insofar as they apply to the maintenance of the quality of clean air, as well as the 1981 rules which apply to nonattainment areas, violate the statute.

Statutory Language

The definition of the term stationary source in § 111(a)(3) refers to “any building, structure, facility, or installation” which emits air pollution. This definition is applicable only to the NSPS program by the express terms of the statute; the text of the statute does not make this definition applicable to the permit program. Petitioners therefore maintain that there is no statutory language even relevant to ascertaining the meaning of stationary source in the permit program aside from § 302(j), which defines the term major stationary source. We disagree with petitioners on this point.

The definition in § 302(j) tells us what the word “major” means—a source must emit at least 100 tons of pollution to qualify—but it sheds virtually no light on the meaning of the term “stationary source.” It does equate a source with a facility—a “major emitting facility” and a “major stationary source” are synonymous under § 302(j). The ordinary meaning of the term facility is some collection of integrated elements which has been designed and constructed to achieve some purpose. Moreover, it is certainly no affront to common English usage to take a reference to a major facility or a major source to connote an entire plant as opposed to its constituent parts. Basically, however, the language of § 302(j) simply does not compel any given interpretation of the term source.

Respondents recognize that, and hence point to § 111(a)(3). Although the definition in that section is not literally applicable to the permit program, it sheds as much light on the meaning of the word source as anything in the statute. As respondents point out, use of the words “building, structure, facility, or installation,” as the definition of source, could be read to impose the permit conditions on an individual building that is a part of a plant. A “word may have a character of its own not to be submerged by its association.” *Russell Motor Car Co. v. United States*, 261 U.S. 514, 519 (1923). On the other hand, the meaning of a word

must be ascertained in the context of achieving particular objectives, and the words associated with it may indicate that the true meaning of the series is to convey a common idea. The language may reasonably be interpreted to impose the requirement on any discrete, but integrated, operation which pollutes. This gives meaning to all of the terms—a single building, not part of a larger operation, would be covered if it emits more than 100 tons of pollution, as would any facility, structure, or installation. Indeed, the language itself implies a bubble concept of sorts: each enumerated item would seem to be treated as if it were encased in a bubble. While respondents insist that each of these terms must be given a discrete meaning, they also argue that § 111(a)(3) defines “source” as that term is used in § 302(j). The latter section, however, equates a source with a facility, whereas the former defines source as a facility, among other items.

We are not persuaded that parsing of general terms in the text of the statute will reveal an actual intent of Congress. We know full well that this language is not dispositive; the terms are overlapping and the language is not precisely directed to the question of the applicability of a given term in the context of a larger operation. To the extent any congressional “intent” can be discerned from this language, it would appear that the listing of overlapping, illustrative terms was intended to enlarge, rather than to confine, the scope of the agency’s power to regulate particular sources in order to effectuate the policies of the Act.

* * *

The fact that the agency has from time to time changed its interpretation of the term source does not, as respondents argue, lead us to conclude that no deference should be accorded the agency’s interpretation of the statute. An initial agency interpretation is not instantly carved in stone. On the contrary, the agency, to engage in informed rulemaking, must consider varying interpretations and the wisdom of its policy on a continuing basis. Moreover, the fact that the agency has adopted different definitions in different contexts adds force to the argument that the definition itself is flexible, particularly since Congress has never indicated any disapproval of a flexible reading of the statute.

Significantly, it was not the agency in 1980, but rather the Court of Appeals that read the statute inflexibly to command a plantwide definition for programs designed to maintain clean air and to forbid such a definition for programs designed to improve air quality. The distinction the court drew may well be a sensible one, but our labored review of the problem has surely disclosed that it is not a distinction that Congress ever articulated itself, or one that the EPA found in the statute before the courts began to review the legislative work product. We conclude that it was the Court of Appeals, rather than Congress or any of the decisionmakers who are authorized by Congress to administer this legislation, that was primarily responsible for the 1980 position taken by the agency.

Policy

The arguments over policy that are advanced in the parties’ briefs create the impression that respondents are now waging in a judicial forum a specific policy battle which they ultimately lost in the agency and in the 32 jurisdictions opting for the bubble concept, but

one which was never waged in the Congress. Such policy arguments are more properly addressed to legislators or administrators, not to judges.³⁸

In this case, the Administrator's interpretation represents a reasonable accommodation of manifestly competing interests and is entitled to deference: the regulatory scheme is technical and complex, the agency considered the matter in a detailed and reasoned fashion, and the decision involves reconciling conflicting policies. Congress intended to accommodate both interests, but did not do so itself on the level of specificity presented by this case. Perhaps that body consciously desired the Administrator to strike the balance at this level, thinking that those with great expertise and charged with responsibility for administering the provision would be in a better position to do so; perhaps it simply did not consider the question at this level; and perhaps Congress was unable to forge a coalition on either side of the question, and those on each side decided to take their chances with the scheme devised by the agency. For judicial purposes, it matters not which of these things occurred.

Judges are not experts in the field, and are not part of either political branch of the Government. Courts must, in some cases, reconcile competing political interests, but not on the basis of the judges' personal policy preferences. In contrast, an agency to which Congress has delegated policy-making responsibilities may, within the limits of that delegation, properly rely upon the incumbent administration's views of wise policy to inform its judgments. While agencies are not directly accountable to the people, the Chief Executive is, and it is entirely appropriate for this political branch of the Government to make such policy choices—resolving the competing interests which Congress itself either inadvertently did not resolve, or intentionally left to be resolved by the agency charged with the administration of the statute in light of everyday realities.

When a challenge to an agency construction of a statutory provision, fairly conceptualized, really centers on the wisdom of the agency's policy, rather than whether it is a reasonable choice within a gap left open by Congress, the challenge must fail. In such a case, federal judges—who have no constituency—have a duty to respect legitimate policy choices made by those who do. The responsibilities for assessing the wisdom of such policy choices and resolving the struggle between competing views of the public interest are not judicial ones: "Our Constitution vests such responsibilities in the political branches." *TVA v. Hill*, 437 U.S. 153, 195 (1978).

We hold that the EPA's definition of the term "source" is a permissible construction of the statute which seeks to accommodate progress in reducing air pollution with economic growth. "The Regulations which the Administrator has adopted provide what the agency could allowably view as . . . [an] effective reconciliation of these twofold ends. . . ." *United States v. Shimer*, 367 U.S. at 383.

The judgment of the Court of Appeals is reversed.

[Justice MARSHALL and Justice REHNQUIST did not participate in the consideration or decision of these cases. Justice O'CONNOR did not participate in the decision of these cases.]

³⁸ Respondents point out if a brand new factory that will emit over 100 tons of pollutants is constructed in a nonattainment area, that plant must obtain a permit pursuant to § 172(b)(6) and in order to do so, it must satisfy the § 173 conditions, including the LAER requirement. Respondents argue if an old plant containing several large emitting units is to be modernized by the replacement of one or more units emitting over 100 tons of pollutant with a new unit emitting less—but still more than 100 tons—the result should be no different simply because "it happens to be built not at a new site, but within a pre-existing plant."

NOTES

1. The Natural Resources Defense Council did not even attempt to defend the reasoning of the Court of Appeals in the proceedings before the Supreme Court. Why? What was the argument put forth by NRDC?

2. Before the *Chevron* decision, the Court of Appeals for the District of Columbia Circuit had approved the use of “bubbles,” but only in PSD areas. Compare *Alabama Power Co. v. Costle*, 636 F.2d 323 (D.C. Cir. 1979) with *ASARCO, Inc. v. EPA*, 578 F.2d 319 (D.C. Cir. 1978). What was the basis for the court’s distinction? See *Alabama Power*, 636 F.2d at 392.

3. Consider the problem with “bubbles” posed by the NRDC at note 38 of the opinion. The Court responds by describing the problem as a “policy argument.” Is the bubble concept good policy? In this context, compare the permit requirements for major stationary sources in nonattainment areas at § 173 with the requirements established under the bubble program, *infra* at 252.

4. The Court finds that “[t]he fact the agency has from time to time changed its interpretation of the term source does not, as respondents argue, lead us to conclude that no deference should be accorded the agency’s interpretation of the statute.” On the other hand, the Court has suggested in several other recent cases, that “[a]n agency interpretation of a relevant provision which conflicts with the agency’s earlier interpretation is ‘entitled to considerably less deference’ than a consistently held agency view. *I.N.S. v. Cardoza Fonseca*, 480 U.S. 421, n. 30, citing *Watt v. Alaska*, 451 U.S. 125, 143 (1981). See also *Motor Vehicle Manufacturers Ass’n v. State Farm Insurance*, 463 U.S. 29 (1983).

5. *Chevron* is one of the most commonly cited cases in the field of administrative law. Nonetheless, many commentators are critical of its basic holding. Consider, for example, the following comments of Timothy Dyk:

[S]urely one of the most important developments in administrative law in the last several decades has been the Supreme Court’s *Chevron* decision, under which the Supreme Court will defer to the agency’s interpretation of its own governing statute where the statute is ambiguous and the agency’s construction is reasonable. This reflects a conscious refusal on the part of the Supreme Court to play its traditional role in interpreting federal statutes. It represents, as Professor Sunstein has noted, a kind of “counter-*Marbury*.” Judge Starr has described *Chevron* as “a case which all appellate judges these days bear firmly in mind in reading statutes,” and they do. *Chevron* has had an enormous impact upon judicial review of administrative action in both the Courts of Appeals and in the Supreme Court. Two Terms after *Chevron*, Judge Starr commented that in the Supreme Court “*Chevron* has been employed with regularity, and in all cases save one the agency won the case.” While the agency record in the past two Terms is more mixed, the centrality of *Chevron* to review of administrative agencies continues.

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In recognition of its importance, *Chevron* receives attention not only from law professors and the courts. On April 19, 1990, Congress held hearings to consider whether the *Chevron* interpretive principles should be altered. Even the public pays attention to *Chevron*. On July 18, 1990, Walter Dellinger condemned *Chevron* before a cheering throng of several

hundred. That might have had something to do with the Court's use of *Chevron* in *Rust v. Sullivan* to find the regulation authorized by the statute, and the fact that those assembled were about to lobby on the Hill for a change in that legislation. I like to think, however, that the opposition was more broadly based.

More specifically, I agree with those who suggest that *Chevron* went too far in deferring to agency interpretations and that the *Chevron* approach is an abdication of the function of judicial review conferred by the Constitution and the Administrative Procedure Act. Many who practice both before the Supreme Court and in the area of administrative law believe that there are special reasons to question the wisdom of reposing trust in administrative agencies with respect to issues of statutory construction. This mistrust arises from several different sources.

(1) The political agenda of the Executive Branch is largely controlling at administrative agencies. . . . This influence stems in part from the ability of the incumbent administration to appoint the agency chair and the large role of the chair in setting the agency agenda, appointing staff, and formulating policy.

* * *

(2) Many agency members, even if they have no ambition for higher political office, often conduct themselves at their agencies with a view to later employment opportunities in the private sector.

(3) To the extent that agencies pay attention to the legislative branch, and they do, they are likely to be far more interested in the views of the current congressional appropriations and oversight committees than they are likely to care about the views of some past Congress.

* * *

(4) One of the justifications for *Chevron* is that members of the administrative agencies are supposedly expert in construing their organic statute. In fact, the agency members often have no real claim to expertise. . . . Because of conflict problems, some come to the agency with little or no background in the area of the agency's authority. And, again, the short tenure discourages the intellectual commitment that would be necessary to understand the complex issues of statutory construction. The expertise of the agency usually resides in the agency bureaucracy rather than in the members who formulate policy. This seems to belie the claim that the appointed agency members, who are ultimately responsible for policy formulation, have a special claim to expertise. Just as criticism has been directed at congressional staff for usurping the authority of the members, so too it can be suggested that the agency bureaucracy in this area of interpretation has usurped the policymaking function of the agency members.

Dyk, *The Supreme Court's Role in Not Shaping Administrative Law*, 44 ADMIN. L. REV. 429 (1992). Mr. Dyk goes on to suggest that the *Chevron* decision may be a product of the "lack of competence" of our federal courts in dealing with complex regulatory matters. He offers four suggestions for addressing this problem. First, establishing an independent research office within the Supreme Court. Second, allowing divided arguments by private parties. Third, requiring that *amicus* briefs be consolidated. And finally, selecting more experienced law clerks. Do you agree with his criticism and suggested solutions?

**EMISSIONS TRADING POLICY STATEMENT;
GENERAL PRINCIPLES FOR CREATION, BANKING,
AND USE OF EMISSION REDUCTION CREDITS**

EPA, 51 Fed. Reg. 43,814 (1986)

* * *

I. INTRODUCTION: BASIC ELEMENTS OF EMISSIONS TRADING

This statement details EPA policy on emissions trading. It sets out conditions EPA considers necessary for emissions trades to satisfy the Clean Air Act. It also clarifies and otherwise makes final the Interim Policy proposed on April 7, 1982 (47 Fed. Reg. 15076). It is accompanied by a Technical Issues Document which elaborates and provides greater detail on principles set forth below. Finally, it addresses new issues, and incorporates certain additional safeguards as a result of past trading experience, to better assure the environmental integrity of future trades.

A. What is Emissions Trading

Emissions trading consists of bubbles, netting, emission offsets, and emission reduction banking. These steps involve creation of surplus emission reductions at certain stacks, vents or similar sources of emissions and use of these emission reductions to meet or redefine pollution control requirements applicable to other emission sources. Such emissions trades can provide more flexibility to meet environmental requirements, and may therefore be used to reduce control costs and encourage faster compliance. Moreover, by developing “generic” trading rules (see Section III below) states may be able to expedite bubble approvals by eliminating the need for case-by-case SIP revisions and by providing more predictable approval criteria.

B. The Bubble

EPA’s bubble lets *existing* plants (or groups of plants) increase emissions at one or more emission sources in exchange for compensating extra decreases in emissions at other emission sources. Approved bubbles give plant managers the ability to implement less costly ways of meeting air quality requirements. To be approvable, each bubble must produce results which are equivalent to or better than the baseline emission levels in terms of ambient impact and enforceability. Thus, bubbles should jeopardize neither ambient standards nor applicable PSD increments and visibility requirements. Under EPA’s bubble, emission reductions from existing sources can not be used to meet technology-based requirements applicable to new or modified stationary sources.

C. Netting

Netting may exempt “modifications” of existing major sources from certain preconstruction permit requirements under New Source Review (NSR), so long as there is no net emissions increase within the major source or any such increase falls below significance levels. By “netting out,” the modification is not considered “major” and is therefore not subject to associated preconstruction permit requirements for major modifications under 40 C.F.R. 51.18, 51.24, 52.21, 52.24, 52.27, or 52.28. The modification must nevertheless meet applicable new source performance standards (NSPS), national emissions standards for hazardous air pollutants (NESHAPs), preconstruction applicability review requirements under 40 CFR 51.18(a)-(h) and (l), and SIP requirements.

Netting's scope is determined by the definition of "source" for review of major modifications. In general, PSD areas use a single, plantwide definition, allowing actual emission reductions anywhere in a contiguous plant to compensate for potential emission increases at individual emitting units within the plant. Nonattainment areas can choose either this single, plantwide definition or a dual definition, so long as the definition selected does not interfere with attainment and maintenance of NAAQS and is consistent with progress towards attainment. Under the plantwide definition, significant net actual increases at the plant as a whole will trigger new source review. Under the dual definition, significant increases at either the plant as a whole or individual emitting units will trigger new source review.

In addition to these federal definitions for major new sources and modifications, state preconstruction permits for major or minor new sources and modifications may be required under 40 CFR 51.18(a), and some states preclude netting.

D. Emission Offsets

In *nonattainment areas*, major new stationary sources and major modifications are subject to a preconstruction permit requirement that they secure sufficient surplus emission reductions to more than "offset" their emissions. This requirement is designed to allow industrial growth in nonattainment areas without interfering with attainment and maintenance of ambient air quality standards. It is currently implemented through SIP regulations adopted by states to meet the requirements of 40 CFR 51.18(j).

In *attainment areas*, some new sources and modifications might not otherwise be able to be constructed because their emissions would result in an exceedance of the applicable PSD increment or ambient air quality standard, would significantly contribute to a violation of an ambient air quality standard in a designated primary nonattainment area, or would significantly contribute to visibility impairment in a Federal Class I area. These sources may use emissions offsets to allow desired growth while protecting that increment, standard, or visibility.

E. Emission Reduction Banking

Firms may store qualified emission reduction credits (ERCs) in EPA-approvable banks for later use in bubble, offset or netting transactions. Depending on the bank's rules, banked ERCs may also be sold or transferred to other firms which seek to meet certain regulatory requirements by use of emissions trades.

EPA's revised Offset Ruling (40 C.F.R. Part 51, Appendix S) allows states to establish banking rules as part of their SIPs. This Policy Statement and accompanying Technical Issues Document detail the necessary components of a complete state banking rule approvable under the Clean Air Act. While many areas also allow banking of emission reductions for various purposes through various formal or informal banking mechanisms, banks which do not meet today's criteria (e.g., by not making banked emission reductions enforceable by the state by the time the reductions are actually banked, or by not assuring that deposits are taken explicitly into account for SIP planning purposes) cannot qualify emission reductions as ERCs, and may offer substantially less protection in the event of future SIP corrections or changes in ambient attainment status.

F. Generic Trading Rules

Generic rules adopted as part of the SIP can authorize states to approve certain types of individual transactions without the need for case-by-case SIP revisions or associated federal review prior to approval. The first state generic bubble rule was approved by EPA April 6, 1981 (46 FR 20551). For the current scope of permissible rules, see Section III below.

G. Effect of this Policy Statement

Emissions trading is largely voluntary: no source is required to trade, and no state is required by EPA to approve a particular trade or to adopt a generic rule. Trading merely offers states and stationary sources alternative ways to meet regulatory requirements. For example, states are free to adopt generic rules or continue to implement trades as individual SIP revisions. They may adopt rules which incorporate all or any combination of the above trading approaches.

* * *

This policy requires that substantial additional reductions (at least 20%) in emissions remaining beyond applicable baselines be produced by future bubbles in primary nonattainment areas which require but lack approved demonstrations of attainment. However, applications for bubbles in such areas which are still pending at EPA without formal action under the 1982 policy, or which were previously submitted to EPA Regions under the 1982 policy but not accepted for evaluation, will be reexamined and processed for approval if they meet the requirements of the 1982 policy and contribute to progress towards attainment. "Progress towards attainment" means some extra reduction beyond equivalence to a lowest-of-actual-SIP-allowable-or-RACT-allowable emissions baseline, with this baseline applied as of the time applicants originally sought credit. Pending bubbles in attainment areas and nonattainment areas with approved demonstrations of attainment will be processed for approval if they meet the requirements of the 1982 policy and show that ambient standards, PSD increments and visibility will not be jeopardized.

* * *

II. REQUIREMENTS FOR CREATING, USING, OR BANKING EMISSION REDUCTION CREDITS

A. Creating Emission Reduction Credits

Emission reduction credits (ERC's) are the common currency of all trading activity. ERCs may be created by reductions from either stationary, area, or mobile sources. To assure that emissions trades do not contravene relevant requirements of the Clean Air Act, only reductions which are *surplus*, *enforceable*, *permanent*, and *quantifiable* can qualify as ERCs and be banked or used in an emissions trade.

1. *Surplus.* At minimum, only emission reductions not required by current regulations in the SIP, not already relied on for SIP planning purposes, and not used by the source to meet any other regulatory requirement, can be considered surplus. To determine the quantity of emission reductions that are surplus, the state must first establish an appropriate emissions baseline from which surplus reductions can be calculated. Baseline emissions for any source are the product of three factors—emission rate, capacity utilization, and hours of operation.

In attainment areas, the lower of actual or allowable values must generally be used for each of these baseline factors. However, allowable values for one or more of these factors, when higher than actual values, may be used in calculating the baseline emissions, provided those values are shown to be used or reflected in an approved demonstration. The burden of meeting this test by written evidence rests with the state or applicant which seeks to use an allowable value.

When allowable values for one or more baseline factors are not used or reflected in an approved demonstration, such values may still be used in calculating baseline emissions. However, in such cases applicants must perform appropriate modeling to demonstrate that

allowable values which are higher than actual values will not delay or jeopardize attainment and maintenance of ambient standards.

In attainment areas where the PSD baseline has been triggered, credit may be granted consistent with the PSD baseline concentration as specified in 40 C.F.R. 51.24(b)(13) and 52.21(b)(13). This will generally require use of actual values for each of the baseline factors. However, states may use allowable values if they show through appropriate modeling that attainment and maintenance of neither the ambient standards nor applicable PSD increments will be jeopardized, and quantify the amount of increment consumed.

In nonattainment areas with approved demonstrations of attainment, the baseline must be consistent with assumptions used to develop the area's demonstration. This generally means that actual values must be used for each baseline factor where actual values were used for such demonstrations, and that higher allowable values for these factors may be used where allowable values were used for such demonstrations. The burden of showing that an allowable value was used or reflected in the approved demonstration rests with the state or applicant which seeks to use an allowable value. In the absence of written evidence to that effect, full Level III modeling would be required to make use of an allowable value in baseline calculations.

In primary nonattainment areas which need but lack approved demonstrations of attainment, states must show that bubbles meet special "progress" requirements designed to produce a net air quality benefit. This must be demonstrated by (1) using the lowest-of-actual-SIP-allowable-or-RACT-allowable emissions baseline for each source involved in the trade; (2) meeting the ambient equivalence tests outlined in sections II.B.2 of this policy and I.B.1.b. of the Technical Issues Document; and then (3) producing a substantial net reduction in actual emissions (i.e., a reduction of at least 20% in the emissions remaining after application of the baseline specified above). The state must also provide assurances that the bubble is consistent with ambient progress and future air quality planning goals.

2. *Enforceable*. To assure that Clean Air Act requirements are met, each transaction which revises any emission limit upward must be approved by the state and be federally enforceable. Means of making emission limits federally enforceable include SIP revisions (see section IV below), EPA-approved generic bubble rules (see Section III below), and new source preconstruction permits issued by states under EPA-approved SIP regulations pursuant to provisions of 40 C.F.R. 51.18, 51.24, or 51.307, as well as construction permits issued by EPA or delegated states under 52.21. Bubbles should be incorporated in an enforceable compliance instrument which requires recordkeeping based on the averaging period over which the bubble is operating, so it may easily be determined over any single averaging period that bubble limits are being met.

3. *Permanent*. Only permanent reductions in emissions can qualify for credit. Permanence may generally be assured by requiring federally enforceable changes in source permits or applicable state regulations to reflect a reduced level of allowable emissions.

4. *Quantifiable*. Emission reductions must be quantifiable both in terms of *estimating* the amount of the reduction and *characterizing* that reduction for future use. Quantification may be based on emission factors, stack tests, monitored values, operating rates and averaging times, process or production inputs, modeling, or other reasonable measurement practices. The same method of calculating emissions should generally be used to quantify emission levels both before and after the reduction.

B. Using Emission Reduction Credits

ERCs may be used by sources in bubble, offset or netting transactions. The general principles below will assure that all uses of ERCs are consistent with ambient attainment and

maintenance considerations under the Clean Air Act. They are further articulated in the accompanying Technical Issues Document.

1. *Emissions trades must involve the same criteria pollutant.* An emission reduction may only be traded against an increase in the same criteria pollutant. For example, only reductions of SO₂ can be substituted for increases of SO₂.

2. *All uses of ERCs must satisfy applicable ambient tests.* The Clean Air Act requires that all areas throughout the country attain and maintain national ambient air quality standards and meet applicable ambient requirements relating to PSD increments and Class I protection, including visibility. The ambient effect of a trade depends on the dispersion characteristics of the pollutant involved. With the exception of visibility for NO_x, dispersion considerations will generally not affect trades involving VOC or NO_x, whose impacts occur across broad geographic areas. For these pollutants "pound for pound" trades may be treated as equal in ambient effect where all sources involved in the trade are located in the same control strategy demonstration area, or where the state otherwise shows such sources to be sufficiently close that a "pound for pound" trade can be justified. However, dispersion characteristics are important for bubble and offset trades of SO₂, particulates, CO, or lead, whose ambient impact may vary with where the emission increases and decreases occur. To assure ambient equivalence, such trades of these pollutants must satisfy ambient tests under the modeling screen discussed in the Technical Issues Document or under a similar, equally effective approach.

3. *Bubbles must not increase hazardous pollutants.* Bubbles may not be used to meet applicable requirements of National Emissions Standards for Hazardous Air Pollutants (NESHAPs) promulgated under section 112 of the Clean Air Act, to increase emissions at any source beyond the levels applicable NESHAPs prescribe, or to create any net increase in baseline emissions of a pollutant regulated under section 112. The applicable baseline for regulated sources is the lower of actual or NESHAPs-allowable emissions of the hazardous pollutant.

Where a NESHAP has been proposed but not yet promulgated for a source category which emits a pollutant listed under section 112, the proposal will serve as an interim guideline for evaluating the effects of any proposed emissions trade involving a source that would be subject to the proposed standard. In general, such trades will be approvable with respect to the emissions component of the trade subject to the proposal, so long as they result in emission limits at each source emitting the relevant pollutant which are equivalent to or lower than those the proposed NESHAP would have required if already promulgated.

Where a pollutant has been *listed* under section 112 or where EPA has published a Notice-of-Intent-to-List, but no regulations for the source category involved in the trade have yet been proposed or promulgated, the trade will generally be acceptable with respect to the emissions component of the trade subject to notice or listing, if there is no net increase in actual emissions of that pollutant as a result of the trade.

* * *

4. *ERCs from existing sources cannot be used to meet technology-based requirements applicable to new sources.* Under Clean Air Act section 111 and EPA implementing regulations, new affected facilities must satisfy technology-based New Source Performance Standards (NSPS), regardless of the attainment status of the area in which they are located. Under sections 165 and 173 and EPA implementing regulations, new or modified major stationary sources must also satisfy technology-based control obligations associated with pre-construction permits. These requirements prohibit use of credits from existing sources to meet or avoid applicable NSPS, and bar use of such credits to meet applicable new source

review requirements for best available control technology (BACT) in PSD areas, or lowest achievable emission rate control technology (LAER) in nonattainment areas.

5. *States may approve bubbles in primary nonattainment areas which require but lack approved demonstrations of attainment*, provided such trades meet requirements designed to produce a net air quality benefit and the state provides certain assurances. See section II.A.1. above and the Technical Issues Document, section I.A.1.b. Bubbles which meet these objective requirements will be processed for approval by EPA.

6. *Sources need not be subject to binding compliance schedules based on current SIP requirements* before they can apply for a bubble which would supersede those requirements. Sources that are already subject to binding compliance schedules should be aware, however, that such schedules remain fully enforceable until a bubble affecting the schedule has been approved by EPA or under a state generic rule and the schedule has been modified accordingly. Sources subject to compliance schedules in administrative orders or judicial decrees must obtain prior approval from EPA or the relevant court, as appropriate, to be relieved from the schedule contained in the order or decree. Sources that are subject to SIP requirements remain responsible for meeting those requirements unless and until a bubble has become effective under Federal law. See section II.B.12 below.

7. *States may extend certain compliance schedules*. States may no longer grant compliance extensions under new or revised generic rules in *nonattainment areas*, whether or not such areas have demonstrations. However, states may continue to grant compliance date extensions under generic rules in *attainment areas*, provided EPA has approved the extension provisions of the generic rule as being adequate to comply with the Clean Air Act, including requirements for attainment and maintenance of ambient air quality standards.

* * *

8. *States may approve bubbles involving open dust sources of particulate emissions*, based on modeling demonstrations. Open dust trades may be approved through individual SIP revisions based on acceptable modeling and/or monitoring demonstrations, provided sources agree to post-approval monitoring to determine if predicted air quality results have been realized and make an enforceable commitment to achieve necessary additional reductions if predicted results do not materialize.

9. *Trade involving lead*. Unlike other criteria pollutants, EPA does not designate nonattainment areas for lead. However, the Regional Administrator will review lead trades, as all other trades, to assure that they do not interfere with attainment and maintenance of NAAQS.

10. *Trades involving ERCs from mobile source measures*. ERCs from mobile source measures may be used to meet SIP requirements applicable to existing stationary sources, so long as such reductions are surplus, permanent, quantifiable, and enforceable. Reductions from certain types of mobile-source measures (e.g., mechanical conversion of existing vehicle fleets to cleaner fuels such as methanol) may satisfy these criteria more readily than those from other transport-related measures. However, due to possible difficulties in determining whether specific mobile-source reductions fully meet these criteria, all such trades must be implemented as case-by-case SIP revisions.

11. *Interstate trades*. Trades involving sources located in neighboring states may be approved, provided they meet all other requirements of today's notice. However, in order to avoid complex SIP accounting issues, where state trading requirements differ EPA will require that such trades meet the substantive requirements of the more stringent state. In general, EPA will deem ERCs created in one state to contribute to progress in the state where used to the

extent of that use, provided that applicable ambient tests (section II.B.2 above) are met. Interstate trades must be implemented through case-by-case SIP revisions.

12. *Bubbles must not impede enforcement.* In general, bubbles are a form of SIP revision which should be treated neither more nor less stringently than other SIP revisions. Bubbles should not become a shield against enforcement actions for sources which have failed to take necessary steps to meet required control obligations on time.

Sources seeking trades should note that they remain subject to enforcement of existing (pre-trade) SIP limits until the bubble is approved. EPA will use the same principles and procedures for deciding whether to initiate enforcement actions in these circumstances as the Agency applies to any other source which is subject to a proposed or final SIP revision.

* * *

C. Banking Emission Reduction Credits

Only emission reductions that are surplus, permanent, quantifiable, and enforceable can qualify as ERCs and be deposited in EPA-approvable banks. Such banks offer sources legal recognition that qualifying reductions meet these ERC requirements. However, the fact that an ERC has been banked does not relieve it from the need to meet all criteria of the specific regulatory program under which it is to be used. Because some trades have special limitations (*e.g.*, only reductions occurring at the same major stationary source can be used for netting), banks do not guarantee the validity or specific amount of particular banked ERCs for all potential uses or for all time. To provide maximum protection for the environment and sources and to avoid potential legal problems, state banking rules may specify the types of sources eligible to bank ERCs and any additional conditions placed on certifying, holding or using banked ERCs.

* * *

III. STATE GENERIC TRADING RULES

Use of emission reduction credits under state regulations approved by EPA as generic for identified classes of trades will not require individual SIP revisions for those trades. The Technical Issues Document explains acceptable generic procedures which states may adopt to reduce the need for individual SIP revisions.

Emissions trades can be approved without case-by-case SIP revisions if evaluated by the state under EPA-approved procedures which assure that no trade which meets their terms will interfere with timely attainment and maintenance of ambient standards, protection of applicable PSD increments, or visibility provisions. State generic rules are approvable only if their procedures are sufficiently replicable in operation to meet this test. By approving the generic rule, EPA approves in advance an array of SIP-compatible emission limits, and no further case-by-case Federal review or approval is required for individual trades which meet the terms of the rule.

* * *

Any trade under a generic rule will involve emission increases at some sources and extra emission decreases at others. For trades to be approvable under a generic rule, the sum of these increases and decreases (beyond applicable net baseline emissions) must be zero or less.

* * *

In primary nonattainment areas which need but lack approved demonstrations, new generic rules must require, and existing generic rules must, as requested by EPA, be revised to require bubbles to use lowest-of-actual-SIP-allowable-or-RACT-allowable emissions baselines, and produce a net air quality benefit. New or revised generic rules in these

nonattainment areas must be accompanied by certain assurances of consistency with air quality planning goals as well as a commitment to make certain additional assurances when the state approves individual bubbles under the rule. Bubbles approved under existing generic bubble rules before the effective date of this policy will not be affected by these requirements. Because EPA-approved state regulations have independent legal force, future bubbles submitted under existing generic rules may also be approved by states in accord with those rules, until such rules are modified to meet the criteria below.

* * *

IV. BUBBLES WHICH REQUIRE CASE-BY-CASE SIP REVISIONS

States and sources must use the case-by-case SIP revision process to implement bubbles which are not covered by a generic rule. Because the case-by-case SIP revision process can take account of many more individual variations, numerous trades which could not be accomplished through generic rules or similar means may still be approvable as case-by-case SIP revisions.

EPA will take action on generic rules and individual trades submitted as SIP revisions as quickly as circumstances permit after a state has adopted a SIP revision and submitted the action to EPA. EPA encourages "parallel processing" of such SIP revisions, with EPA and the state conducting concurrent review so that both agencies can propose and take final action at roughly the same time. EPA will also publish noncontroversial SIP revisions as immediate final actions, converting them to proposals only if requests to submit adverse comments are received within 30 days (see 46 Fed. Reg. 44477, September 4, 1981). In all bubble actions EPA will clearly identify (or require states to identify, as appropriate) both pre- and post-trade actual and allowable emissions for each source involved in the trade, so that the ambient effects of each bubble may be known.

V. CONCLUSION

This Policy Statement sets out basic principles for approving individual trades and generic trading rules. It tightens many requirements in order to better ensure SIP integrity and environmental progress, while offering ample opportunities for use of approvable, environmentally-sound trades. EPA encourages states and sources to use these principles as a framework and refer to the accompanying Technical Issues Document for further discussion and examples. EPA also encourages states to develop other approaches which satisfy these principles while meeting their specific needs.

As a policy statement, this notice does not establish conclusively how EPA will resolve issues in individual cases. EPA will accept public comment on specific SIP changes submitted under it, and will review individually each generic rule and those emissions trades submitted as SIP revisions to determine their acceptability under the Clean Air Act. Interested parties will have full opportunity to scrutinize application of these principles in specific cases, and to seek subsequent judicial review of such cases after EPA has taken final action on particular trades or generic rules.

Dated: November 18, 1986.

Lee M. Thomas, *Administrator*.

NOTES

1. The preamble to the Emissions Trading Policy Statement states that the policy “does not constitute final action of the Agency within the meaning of § 307(b) of the Clean Air Act, and therefore is not reviewable. Rather it establishes general guidance on approvable voluntary trades. EPA will implement this guidance in later rulemaking actions that will be judicially reviewable.” 51 Fed. Reg. 43,814 (1986). Do you agree with EPA’s assessment of the policy statement? Is the policy statement a rule within the meaning of the Administrative Procedure Act? See 5 U.S.C. §§ 551(4), 704.

2. The Policy Statement makes frequent reference to “nonattainment areas with approved demonstrations of attainment.” This language may seem unclear but it simply refers to nonattainment areas with EPA approved plans for attaining the NAAQS under § 172. (Likewise, nonattainment areas which lack approved demonstrations of attainment lack such EPA approved plans.)

3. In accordance with the Clean Air Act, EPA set many different kinds of standards of performance based on the category of the facility and its size. New sources must meet new source performance standards (NSPS) which are set at the emission levels achievable through application of the best system of continuous emission reduction, taking into consideration cost and other values, which has been adequately demonstrated. § 111(a)(1). Major new stationary sources in nonattainment areas must also comply with the lowest achievable emission rate (LAER). § 173(2). This is defined as the more stringent of either the most stringent emission limit in any state SIP, or the most stringent emission limitation achieved in practice for the category of source. § 171(3). Major new emitting facilities in attainment or “PSD” areas are subject to the best available control technology (BACT). Like the NSPS and LAER, BACT is also an emission limitation. BACT is based on “the maximum degree of reduction of each pollutant subject to regulation” and emitted from the facility, which the permitting authority determines is achievable taking into account energy, environmental and economic impacts and other costs. § 169(3). Under EPA’s Policy, emission trades, including the bubble, cannot be used to meet these technology-based emission limitations. How then can the bubble be used? See the discussion of “netting” at § I.C. of the Policy Statement. See also 47 Fed. Reg. 15,083 (1982). What is the reason for this restriction? How does one “net out” of new source review? Why is “reasonably available control technology” (RACT), which must be achieved by all existing, major stationary sources in nonattainment areas, omitted from this list? See 40 C.F.R. § 51.100(o) (1990).

4. In the 1986 policy statement, EPA changed its previous policy and now allows the bubble to be used to meet NSPS. See Levin, *Statutes and Stopping Points: Building a Better Bubble at EPA*, REGULATION (March/April, 1985). This policy change, however, is not as broad as it may seem. EPA has not changed its fundamental position that you cannot net out of NSPS. It has, however, decided to allow a new source in Illinois to meet NSPS on a plant-wide basis rather than at each stack. See 52 Fed. Reg. 27,849 (1987). How does this complicate the bubble policy?

5. EPA’s bubble policy allows firms to “bank” emission reduction credits (ERCs) for later use in bubble, netting or offset transactions. Further, ERCs are freely transferable. What ramification does the banking program have for nonattainment areas? How does the policy seek to assure that the banking program will not interfere with attainment of the NAAQS?

6. Recall the practical pollution problem identified in the *Air Pollution Control District* case, *supra*, Chapter Six. The Gallagher Plant in Indiana contributed substantial quantities of SO₂ to portions of a nonattainment area in Jefferson County, Kentucky, that were actually in compliance with NAAQSs. A smaller percentage of SO₂ was contributed to those portions of the nonattainment area actually out of compliance. What relevance does this problem have for emissions trading?

7. For a comprehensive analysis of EPA's emissions trading policy, its history and implementation, see LIROFF, REFORMING AIR POLLUTION REGULATION: THE TOIL AND TROUBLE OF EPA'S BUBBLE (Conservation Foundation, 1986). See also, Dudek & Palmisano, *Emissions Trading: Why is This Thoroughbred Hobbled?*, 13 COLUM. J. OF ENV. L. 217 (1988).

8. EPA's emissions trading policy has been supplemented with the Environmental Incentive Program (EIP) rules which were promulgated in 1994. 40 C.F.R. part 51, subpart U (1996); see also 59 Fed. Reg. 16,690 (1994). EIPs are optional under many state programs but are mandatory for certain O₃ and CO nonattainment areas in accordance with §§ 182(g)(3), 182(g)(5), 187(d)(3), and 187(g). See 59 Fed. Reg. 16,690-91. The kinds of programs that qualify as EIPs include but are not limited to emissions trading schemes such as those authorized by the 1986 policy statements. EIPs may also include emission fee programs, tax code or zoning provisions, subsidies, and transportation control measures (TCMs) as described in §108(f) of the Act.

9. On November 8, 1996, EPA approved a regional trading EIP for southern California called the Regional Clean Air Incentives Market (RECLAIM). 61 Fed. Reg. 57,775 (1996). A strong market for RECLAIM trading credits (RTCs) has emerged from the program. The 330 facilities involved in the program have traded more than \$42 million in RTCs, with \$21.5 million traded in 1997 alone. SO_x credits ranged in price from \$64/ton for a 1997 credit to \$2,385/ton for a 2010 credit. NO_x credits traded in the range of \$227/ton for a 1997 credit to \$1,980/ton for a 2010 credit. See *California Air Pollution: Strategy for the Future*, 28 BNA Env't Rep. 2540, 2541 (1998).

PROBLEM #7: PERMITS, BUBBLES, AND VISIBILITY

The Zion Corporation has proposed to increase the capacity of its existing copper smelter located just outside of Sage Brush City in the State of Deseret. The facility is located in the Central Deseret Air Quality Control Region, which is a nonattainment area for SO₂ and an attainment area for all other criteria pollutants. The proposed modification will result in a net increase in annual SO₂ and particulate emissions from the smelter. Current SO₂ emissions are 20,000 tons/year. Particulate emissions are currently 25,000 tons/year. Projected emissions following the changes are 24,000 tons of SO₂/year and 30,000 tons of particulates/year. The rate of emissions will remain the same. No change is proposed at the adjacent 50 megawatt power plant which services the smelter. The power plant, which along with the original smelter was constructed in 1965, burns high sulfur coal and employs no emission controls.

You are the General Counsel for the Zion Corporation. The President of the Corporation has asked you to chair a committee that will insure that all necessary permits and approvals are obtained in a timely fashion. How should you proceed? (Begin by reviewing §§ 172 and 173 of the Act.) What standards of performance will apply to Zion's smelter? Will Zion have to obtain a PSD permit as well as a nonattainment permit? What emission trading options might be available to Zion?

Prior to Zion's proposed modification, the State of Deseret had required Zion to install the best available retrofit technology (BART) to control its emissions insofar as they were impairing visibility at a national park located in a neighboring state (and another AQCR) more than 500 miles from Zion's smelter. Was Deseret's action lawful? See § 169A. Compare *Alabama Power Co. v. Costle*, 636 F.2d at 364-68 wherein the court held that a new facility located in a nonattainment area did not have to meet the preconstruction review requirements for PSD areas even where the facility would adversely affect the air quality in that area. What authority does the national park manager have to block the proposed modification of the smelter? See § 165(d).

F. The Acid Precipitation Program

One of the thorniest air pollution problems confronting the EPA is acid rain. Its difficulty stems, in large measure, from the fact that the northeastern states and Canadian provinces experiencing acid rain are generally not the chief source of the SO₂ and NO_x that creates the problem. Jurisdictions adversely affected are understandably upset at having to accept the costs associated with acid rain, while the benefits of unregulated pollution accrue to the polluting states. Congress responded to this issue in 1977 by enacting international air pollution provisions of § 115, and interstate pollution standards at §§ 110(a)(2)(D) and 126. As discussed in Chapter Six, however, these provisions were not successful in ameliorating the problem. The 1990 Amendments adopted a major new program with a fundamental goal of reducing SO₂ emissions by ten million tons and NO_x emissions by two million tons by the

year 2000. S. REP. NO. 228, 101st Cong., 1st Sess. 302 (1989). For SO₂ emissions, the ten million ton reduction is to be achieved through an innovative market system. During Phase I of the program, which begins in 1995, 111 of the dirtiest fossil fuel fired power plants in the country receive emission allowances¹ equal to an emissions rate of 2.5 lbs/mmBtu.² This rate is approximately one-half of the current emissions rate for many of these facilities. See COMPLIANCE STRATEGIES REVIEW, GUIDE TO PHASE I UNITS (Fieldston, 1992).

Phase II of the program begins in the year 2000 and will encompass all fossil fuel fired power plants. Total allowances issued will be 8.9 million. Under Phase II, utilities will receive maximum allowances equivalent to an emissions rate of 1.2 lbs/mmBtu. Sources already below that rate will generally receive allowances based upon their 1985 emissions. Many other exceptions exist, however, to address particular situations.³

Utilities subject to Phase I of the program have several options from which to choose. First, they can change their fuel or fuel mixture. For example, a utility might switch from high sulfur coal to low sulfur coal, or from coal to natural gas. See e.g., COMPLIANCE STRATEGIES REV., VOL. 3, No. 6, p. 1 (1992), announcing a decision by the Niagara Mohawk Power Co. to switch its Dunkirk plant to low sulfur coal. See also, COMPLIANCE STRATEGIES REV., VOL. 3, No. 1, p. 1 (1992). Second, a company can install pollution control technology to limit its emissions. See e.g., COMPLIANCE STRATEGIES REV. VOL. 3, NO. 3, p. 1 (1992) ("Scrubber is Keystone of KU Compliance Plan"); COMPLIANCE STRATEGIES REV. VOL. 2, No. 24, p. 1 ("WVPSC Okays Harrison Scrubbers"). Third, it can purchase allowances from other sources with excess allowances. COMPLIANCE STRATEGIES REV., VOL. 3, NO. 11, p. 1 (1992) ("WP&L is the First to Sell Allowances"). Fourth, it can choose some combination of the first three options. COMPLIANCE STRATEGIES REV. VOL. 3, NO. 11, p. 1 (1992) ("PEPCO to Switch And Enter Allowance Market"). Finally, it can retire and/or replace one or more of its units.

The acid rain program appears to be achieving success. According to a recent EPA report 100% of power plants are in compliance and by the end of 1996 achieved emission reductions of SO₂ 35% below those required by Title IV. NO_x emissions are 18% below the Act's goal for 1996. EPA, 1996 COMPLIANCE REPORT, ACID RAIN PROGRAM, EPA 430-R-97-025, JUNE 1997. A report by the Energy Information Administration (EIA) found that compliance costs to utilities under the acid rain program did not cause an increase in electricity priced in 1995 as compared to 1990 in real terms. *The Effects of Title IV of the Clean Air Amendments of 1990 on Electric Utilities* (May, 1997). Compliance costs (\$836 million/yr.) represent 0.6% of the \$151 billion operating expenses for investor owned utilities in 1995. The market price of emission allowances was much lower than originally anticipated. Early predictions ranged from \$600-\$800/allowance, but EPA reports prices in 1996 were in the range of \$80-\$90/allowance. See, 22 ENV. REP. 2630 (Current Developments) (March 27, 1992). Allowances will be traded in 25-ton increments on the Chicago Board of Trade. *Id.* The high level of uncertainty currently surrounding the cost of SO₂ allowances may have initially hindered the market, but there was a doubling of the volume of allowances traded from 1995 to 1996 and the activity is expected to increase as utility approach compliance planning for the year 2000 Phase II reductions. Compare with COMPLIANCE STRATEGIES REV.,

¹ An "allowance" is equal to one ton of SO₂. § 402(3).

² The Act distinguishes between "affected sources" and "affected units". §402(1),(2). Affected sources are the broader category and may contain one or more affected units.

³ See Garrett & Winner, *A Clean Air Act Primer*, CLEAN AIR DESKBOOK 56 (Env. L. Inst. 1992).

Emission Allowance Trading: Coping With Uncertainty, (Expert Opinion Supplement, March 2, 1992); *Emission Allowance Prices Lower Than Expected*, (Expert Opinion Supplement, Feb. 17, 1992). Set forth below is an extended excerpt from EPA's proposal for implementing the acid deposition program.

ACID RAIN PROGRAM: GENERAL PROVISIONS AND PERMITS, ALLOWANCE SYSTEM, CONTINUOUS EMISSIONS MONITORING, EXCESS EMISSIONS AND ADMINISTRATIVE APPEALS

58 Fed. Reg. 3590 (January 11, 1993); 40 C.F.R. Parts 72, 73, 75, 77 and 78

ACTION: Final rule.

I. General Background: The burning of fossil fuels, particularly coal and oil, releases emissions of sulfur dioxide (SO_2) and nitrogen oxide (NO_x) into the atmosphere. Once in the air, SO_2 and NO_x may undergo various chemical reactions, resulting in transformation of the emissions into sulfates, nitrates, sulfuric acid and nitric acid. These compounds can fall to earth near the emission sources of SO_2 and NO_x or be transported hundreds of miles. Referred to as acidic deposition or acid rain, these compounds can be either dry (gases, aerosols, and particles) or wet (precipitation such as rain, fog, or snow). SO_2 , and NO_x emissions and their byproducts damage ecosystems and man-made materials, are suspected of posing a threat to human health at current levels, and reduce visibility.

Of the approximately 23 million tons of SO_2 and 19 million tons of NO_x emitted annually from all sources in the United States in 1985, about 16 million tons of SO_2 and 7 million tons of NO_x were emitted by electric utilities. Title IV of the Act requires EPA to establish an Acid Rain Program and a national emissions cap of 8.95 million tons per year on electric utility SO_2 emissions to be implemented in two phases. Phase I (beginning in 1995) requires the 110 highest-emitting utility plants to meet an intermediate SO_2 emissions limitation. By the year 2000 (in which Phase II begins) virtually all other utility units with output capacity greater than 25 megawatts and all new utility units will be required to meet emissions limitations as well. Total annual SO_2 emissions will be reduced by 10 million tons below 1980 levels beginning in the year 2000, a reduction of total SO_2 emissions of approximately 40%. Title IV also requires that certain coal-fired electric utility boilers reduce their emissions of NO_x through installation of low NO_x burner technologies at the same time they are required to comply with the SO_2 limitations. However, these rules do not address the NO_x reduction provisions of the Act.

The centerpiece of the Acid Rain Program is a unique trading system in which allowances (each authorizing the emission of up to one ton of SO_2) are bought and sold at prices determined in a free market. Existing utility sources are allocated allowances based on their historic fuel use and the emissions limitations specified in the Act. Utility units are required to limit SO_2 emissions to the number of allowances they hold, but since allowances are fully transferrable, utilities may meet their emissions control requirements in the most cost-effective manner possible. For instance, a utility may decide to (1) switch to a lower sulfur fuel, (2) install flue gas desulfurization equipment (scrubbers) and bank unused allowances or sell them to other utilities/individuals, (3) forego emissions reductions and buy additional allowances (if necessary) or (4) implement energy efficiency measures at the plant or by encouraging customers to undertake them. Other options and combinations of options are

possible, providing an unusually high degree of flexibility for affected sources to comply with the law. The procedures for transferring and tracking allowances are codified in 40 C.F.R. part 73.

In order to operate, each affected source must apply for a permit in which the source certifies that it will hold a sufficient number of allowances to cover its SO₂ emissions, and specifies the source's planned method of compliance. The permit regulation is codified in 40 C.F.R. part 72.

In order to ensure that source compliance results in achieving nationally mandated reductions in SO₂ and NO_x emissions, each affected source must install a system to continuously monitor the emissions and to collect, record, and report emissions data. The continuous emissions monitoring rule is codified in 40 C.F.R. part 75. If an affected unit exceeds its emissions limitation for either SO₂ or NO_x, the Act requires the affected source to pay penalties and, for SO₂, to submit a plan detailing how the excess SO₂ emissions will be offset and when. These requirements act as a strong incentive for compliance with the mandated emissions reductions of the Acid Rain Program. Excess emissions penalty requirements are codified in 40 C.F.R. part 77.

Finally, should there be disputes over decisions by the Administrator regarding any aspect of the Acid Rain Program, administrative appeals procedures are defined in 40 C.F.R. part 78.

* * *

Structural Changes to Today's Rules

Although the final rules published in today's notice remain consistent in content and relatively similar in form with those proposed in December 1991, some structural changes have been made to improve the cogency and general readability of the rules. In drafting the final rules, EPA has endeavored to simplify and streamline the text wherever possible; sections have been relocated to improve the flow of information, redundancies eliminated, and many sections rewritten to enhance clarity. Major changes are noted below. More specific structural changes that are unique to each rule are addressed in the preamble section for that rule.

NOTES

1. The Acid Deposition Program in the 1990 amendments is surely the most ambitious marketable pollution rights experiment ever undertaken in the United States. Still, it does not go far enough for some economists. Terry Anderson and Donald Leal, leaders of the "free market environmentalism" movement, have criticized the program as follows:

[T]radeable permits do not represent a truly free-market approach to reducing acid rain. A government agency still must determine the level of permits, and the permits do not force polluters to compensate those harmed by the pollution. In this system, the political process determines the initial or optimal pollution levels, not the polluters bargaining with those who bear the costs of the pollution. The 10-million ton target established by the Bush administration, for example, "was not based on scientific or economic grounds. It was selected because it was viewed as 'credible'—that is, it was acceptable to Congress, the environmental community, and our Canadian neighbors." As Robert Hahn observed, "Until people see a direct connection between environmental cleanup and

their consumption of other goods and services and seriously question the judgment of their political leaders on these matters, things are unlikely to change.”

T. Anderson & D. Leal, *FREE MARKET ENVIRONMENTALISM*, 158-59 (Pac. Res. Inst. 1991).

2. Related to Anderson's and Leal's criticism of the acid deposition program is the underlying question of whether the ten million ton SO₂ reduction intended to be achieved by the law can be justified on health or welfare grounds. The National Acid Precipitation Assessment Program released a study in the fall of 1990 which concluded that acid rain was a far less serious problem than had previously been believed. The study has been criticized by some scientists. See e.g., Howard Kurtz, *Is Acid Rain a Tempest in a Media Teapot?*, Washington Post, January 14, 1991, at A3. Others, however, have questioned whether the new program isn't a "billion dollar solution to a million dollar problem." S. Fred Singer, *The Answers on Acid Rain Fall on Deaf Ears*, Wall Street Journal, March 6, 1990.

3. Congress' justification for this massive new program is set out in great detail in a Senate Report on the law. S. REP. NO. 228, 101st Cong., 1st Sess. 261-282 (1989).

4. The Internal Revenue Service has ruled that EPA's allocation of allowances under the Acid Deposition Program "does not cause a utility to realize gross income. . . ." IRS Revenue Ruling 92-16 (1992).

AMERICAN MUNICIPAL POWER-OHIO v. EPA

98 F.3d 1372 (D.C. Cir. 1996)

TATEL, Circuit Judge:

An association of municipal electric systems challenges an Environmental Protection Agency rule interpreting the term "thermal energy" in section 410(f) of the 1990 Clean Air Act Amendments. According to petitioner, EPA's definition of the term denies its members an opportunity to transfer emissions allowances that other participants in Title IV's acid rain program enjoy. Because we conclude that EPA's interpretation is reasonable, we deny the petition for review.

I.

In Title IV of the Clean Air Act Amendments of 1990, Congress established a program to reduce acid rain by limiting the sulfur dioxide emissions of electric utilities through a system of transferable emissions allowances. Under the program, EPA allocates annual emissions allowances to each utility "unit" based on the unit's past fuel consumption and emissions rate. §§ 403(a)(1), 405; see generally *Texas Mun. Power Agency v. EPA*, 89 F.3d 858 (D.C. Cir. 1996). If a unit's emissions exceed its allowances, the unit must either reduce emissions or obtain additional allowances. Conversely, a unit that has lowered its emissions rate, or has reduced its utilization or shut down, can either "bank" excess allowances for future use, or transfer them to another utility. By capping the number of allowances at 8.95 million tons of sulfur dioxide per year, § 403(a)(1) (basic allowances of 8.9 million tons), § 405(a)(3) (providing for an additional 50,000 tons), the program aims to reduce annual sulfur dioxide emissions by ten million tons from 1980 levels, § 401(b).

Industrial sources of emissions, as well as existing units of small utilities—for example, those owned and operated by petitioner’s members—are not required to participate in the allowance system. § 403(8) (unit serving a generator of less than 25 megawatts not an “existing unit”), 405(a)(1) (applying allowance requirements to each “existing utility unit”). Under section 410 of the Act, however, these units may “opt-in” to the program and receive allowances. Allowances allocated to opt-in units are not counted toward the 8.95-million-ton cap. § 403(a)(1). Opt-in units which lower their emissions rates are free to save or sell their unused allowances. But unlike utility units required to participate in the program, opt-in units may not transfer unused allowances after shutting down, unless the transfer falls within an exception for “thermal energy” set forth in section 410(f). That section, the meaning of which is the sole issue in this case, provides as follows:

Any unit designated under this section shall not transfer or bank allowances produced as a result of reduced utilization or shutdown, *except that*, such allowances may be transferred or carried forward for use in subsequent years to the extent that the reduced utilization or shutdown results from the replacement of *thermal energy* from the unit designated under this section, with thermal energy generated by any other unit or units subject to the requirements of this subchapter, and the designated unit’s allowances are transferred or carried forward for use at such other replacement unit or units.

§ 410(f). (emphasis added).

EPA interprets “thermal energy” in section 410(f) to mean “the thermal output produced by a combustion source used directly as part of a manufacturing process but not used to produce electricity.” 40 C.F.R. § 72.2 (1995). Because small utilities, unlike most industrial sources, do not produce “thermal energy” as defined by the agency, they cannot take advantage of section 410(f)’s exception to obtain allowances by opting-in and then retiring their existing units. Thus, when small utilities shut down old units, either replacing them or buying electricity from other utilities, they must purchase emissions allowances.

II.

Petitioner AMP-Ohio, an association of some seventy-seven municipal electric systems, challenges EPA’s interpretation of the thermal energy exception as contrary to the language, purpose, and legislative history of Title IV. This presents us with a typical *Chevron* issue. *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). Using “traditional tools of statutory construction,” we first examine whether the statute “directly [speaks] to the precise question at issue.” *Id.* at 842 & 843 n. 9. If so, we follow the statute’s instructions. But “if the statute is silent or ambiguous with respect to the specific issue,” we defer to the agency’s interpretation, provided that it is reasonable. *Id.* at 843-44.

Title IV does not define “thermal energy,” nor does its legislative history suggest a clear Congressional intent regarding the meaning of this more or less technical term. For this reason, we cannot “begin and end our analysis at *Chevron*’s first step,” as we could in *Backcountry Against Dumps v. EPA*, 100 F.3d 147, 150 (D.C. Cir. 1996), another case this Court decides today. Rather, we proceed to step two of *Chevron*, asking whether EPA’s interpretation of the term is reasonable.

Asserting that EPA’s interpretation is too narrow, petitioner argues that the agency should define “thermal energy” to mean simply “heat,” consistent with the term’s literal meaning. Semantically speaking, petitioner has a point: Webster’s defines “thermal energy” as “energy in the form of heat.” *See Webster’s Third International Dictionary* 2373 (1993).

Under petitioner's definition of the term, small utility units would fall within the thermal energy exception because their units, like all those subject to Title IV, literally produce "heat." § 402(15) (defining "unit" as "a fossil fuel-fired combustion device").

Although petitioner's definition may well be plausible, we have little trouble concluding that EPA's interpretation of the thermal energy exception is reasonable. *See Chevron*, 467 U.S. at 843 n.11 ("The court need not conclude that the agency construction was the only one it permissibly could have adopted to uphold the construction. . . ."). Most important, the agency's definition is supported by the language of section 410(f) because it gives meaning to the word "thermal." * * * If Congress had intended the thermal energy exception to apply to every opt-in unit, as it would under petitioner's definition, the word "thermal" would not have been needed.

EPA's interpretation is also compatible with the thermal energy exception's narrow purpose. The exception's author and principal proponent described its purpose as assuring "access to adequate allowances for independent power producers which are a small but increasingly important group of cogenerators of energy." 136 Cong. Rec. S3027 col.1 (daily ed. Mar. 22, 1990) (statement of Sen. Wirth). Explaining specifically how the exception would benefit this group, he stated:

An independent power producer might—for example—enter into an arrangement with a paper mill, where the mill shuts down its dirty boiler and agrees to buy steam from a cleaner facility from an IPP. The independent producer produces steam as an intermediate step toward generating electricity, so it has steam to sell. In this case, the independent producer ought to be able to purchase any unused allowances from the paper mill.

Id. The only evidence of legislative intent behind the thermal energy exception, this statement supports EPA's construction. By permitting allowance transfers where industrial facilities shut down and receive steam from outside cogenerators, EPA's interpretation accomplishes precisely what the Senator's example calls for.

* * *

EPA's interpretation of the thermal energy exception is also consistent with how the Federal Energy Regulatory Commission uses the words "thermal energy" in its rules implementing the Public Utility Regulatory Policies Act of 1978, 16 U.S.C. § 2601 *et seq.* (1994). 18 C.F.R. § 290 *et seq.* (1996). * * *

Finally, EPA's interpretation of section 410(f) supports Title IV's principal goal of reducing sulfur dioxide emissions. Because allowances allocated to opt-in units are not counted towards the statutorily mandated 8.95-million-ton allowance cap, we think it was not unreasonable for EPA to interpret the scope of the exception narrowly in order to limit the number of additional allowances the exception might create. Petitioner's credible argument that a broader exception would encourage small utilities to retire their old, dirty units sooner suggests only that EPA's definition may be shortsighted, not that it is implausible. Whether the environmental benefits from earlier emissions reductions at small utilities outweigh the environmental costs of raising the allowance ceiling is a question for EPA and Congress, not this Court. * * *

* * *

Because EPA's interpretation of section 410(f) is consistent with its language and legislative history, and with the purposes of Title IV, we deny the petition for review.

So ordered.

NOTES

1. Read § 410(f) of the statute. Do you agree with the court that the meaning of this provision is unclear? Now read the definition of “thermal energy” adopted by the EPA. Is EPA’s definition reasonable? How might small utilities have used or abused the opt-in provisions if AMP-Ohio had prevailed?

2. Title IV’s acid deposition control program provides for the regulation of NO_x emissions from fossil-fuel-fired power plants, as well as SO₂ emissions. As described in the following case, however, the NO_x controls operate through more conventional strategies.

ALABAMA POWER CO. v. EPA

40 F.3d 450 (D.C. Cir. 1994)

KAREN LeCRAFT HENDERSON, Circuit Judge:

In an effort to control acid rain, Congress amended the Clean Air Act in 1990 to limit the amount of nitrogen oxide particles that coal-burning electric power facilities can emit into the atmosphere. Many of the nation’s electric utilities and the National Coal Association now petition for review of the Environmental Protection Agency’s rule partially implementing that legislation. The petitioners contend that the rule impermissibly expands the 1990 amendments by interpreting the statutory term “low NO_x burner technology” more broadly than Congress intended and that the agency’s failure to issue the rule by its statutorily prescribed deadline should postpone their compliance obligations. We agree that the agency exceeded its statutory authority and accordingly vacate the rule.

I. BACKGROUND

In 1990 Congress determined that emissions resulting from the combustion of fossil fuels constitute a major source of the atmospheric phenomenon known as acid deposition or, more popularly, acid rain. Concerned that acid rain threatens natural resources and public health, it enacted programs to limit the levels of nitrogen oxides (NO_x) and sulfur dioxides (SO₂) emitted by specific sources. § 401 (acid deposition program findings and purposes).

The NO_x reduction program included in section 407 of the 1990 amendments requires the Administrator of the Environmental Protection Agency (EPA or agency) to set, by rule, mandatory limits on NO_x emissions from certain types of coal-burning boilers used by electric power utilities. The boilers are separated into two groups. § 407. The group at issue here includes “tangentially fired boilers” and “dry bottom wall-fired boilers.”¹ § 407f(b)(1). The limits set by the Administrator must not exceed maximum rates specified by Congress in section 407 unless the Administrator determines that the statutory rates cannot be achieved using “low NO_x burner technology,” *id.*, a recurring phrase whose meaning is the central issue

¹ The provision initially applies only to “Phase I” facilities predominantly located in the eastern and midwestern United States and listed in Table A appended to § 404. A “tangentially fired” boiler’s burners are located in the corner of the furnace and a “wall-fired” boiler’s burners are placed along the furnace wall.

on appeal. The statute requires the Administrator to determine the NO_x limits within eighteen months of its enactment, translating to a deadline of May 15, 1992. *Id.* The statute requires the utilities to reach compliance by January 1, 1995. § 407(b)(1).

A utility can avoid the prescribed NO_x limit, however, if it obtains an “alternative emission limitation” (AEL) from the Administrator. The Administrator must authorize an AEL if a utility demonstrates that it cannot meet the limit by using “low NO_x burner technology.” § 407(d). The statute further provides that the EPA cannot require a utility to install “any additional control technology beyond low NO_x burners” in order to be eligible for an AEL. *Id.* The terms “low NO_x burner technology” and “low NO_x burners” in effect set the outer boundaries of a utility’s duty to reduce NO_x emissions under the 1990 amendments because the Administrator can increase the emission limit if “low NO_x burner technology” cannot meet that limit and a facility must be granted an AEL allowing it to emit a greater level of NO_x if it cannot comply with the prescribed limit using “low NO_x burners.”

Accordingly, the EPA devoted considerable attention to defining the term “low NO_x burner technology” during the rulemaking process. Substantial controversy arose among the agency, interested parties and experts regarding whether the term refers only to burners designed to reduce NO_x emissions or, construed more broadly, also to the emission control method known as overfire air.³

The dispute over whether the statutory term “low NO_x burner technology” includes overfire air was a primary focus of the regulatory proceedings and contributed to a significant delay in the issuance of the final rule. An advisory committee of interest group representatives formed by the agency in July 1991 to attempt a negotiated rulemaking failed to resolve the issue and the EPA did not issue a proposed rule for comment until November 1992, six months after the statutory deadline for issuance of a final regulation. 57 Fed. Reg. 55,632 (1992).

The EPA’s final rule, not promulgated until March 1994, defines “low NO_x burner technology” to include overfire air and offers four reasons for its conclusion. 59 Fed. Reg. 13,538 (1994). First, the agency found that low NO_x burners and overfire air should be considered a common technology because both reduce NO_x emissions through modification of the combustion process. “[B]ased on the combustion chemistry, EPA believes it would be arbitrary and illogical to artificially exclude the use of overfire air which is an integral part of the combustion staging process. . . .” *Id.* at 13,542. Second, the EPA determined that the relevant technical literature frequently refers to low NO_x burners and overfire air as “integral

³ A brief technical background, on which the parties are largely agreed, is necessary at this point to resolve the controversy. NO_x emissions are a byproduct of burning coal. Low NO_x burners and overfire air are both emission control methods designed to limit the formation of NO_x by controlling the amount of oxygen available to react with the nitrogen in the coal as the coal burns. Low NO_x burners accomplish the goal by limiting the amount of oxygen introduced through the burner to the flame. The overfire air technique (also known as “air staging”) removes oxygen from around the burner and reintroduces it at a less volatile stage of the process through a port located above the burner in the furnace. See Babcock & Wilcox, *Steam 13-7* (S.C. Stultz & J.B. Kitto eds., 40th ed.). Low NO_x burners normally are used without overfire air. See *id.* (“[F]rom a cost and performance perspective, the use of NO_x ports should be minimized where possible. Advanced low NO_x burners can frequently meet emission control requirements without the use of NO_x ports.”); Energy Technology Consultants, Inc., *Experience With Wall-Fired Overfire Air and Low NO_x Burner Retrofits on Utility Coal-Fired Boilers 6* (1993). (“AOFA [advanced overfire air] and LNB [low NO_x burners] had never been combined in a retrofit before November 1990. Even today, no new boilers in the United States employ AOFA. . . .”) Low NO_x burners and overfire air are alike, however, in that both affect the combustion process by limiting oxygen.

components of a complete combustion system and not as separate technologies.” *Id.* Third, the agency concluded that a broad definition better effectuates congressional intent because more facilities will be required to meet the prescribed emission limits. *Id.*

* * *

II. DISCUSSION

A. Definition of “Low NO_x Burner Technology”

The petitioners complain, first, that the EPA’s interpretation of the term “low NO_x burner technology” to include overfire air is not authorized by the statute and, second, that the agency’s rulemaking was conducted in an arbitrary and capricious manner. Under the judicial review provision of the Clean Air Act, the court may reverse a rulemaking on either ground. §§ 307(d)(9); 307(d)(1)(F). Because the issue of the agency’s statutory authority is dispositive, we do not reach the petitioners’ second complaint.

Two provisions of section 407 contain the disputed statutory language. Subsection (b)(1) requires the Administrator to set NO_x emission standards within the statutory limits unless the Administrator determines that they cannot be met using “low NO_x burner technology.”⁵ Subsection (d) provides for the issuance of AELs. It requires the Administrator to authorize an AEL if a utility cannot meet the NO_x standards using “low NO_x burner technology.” It further provides that the agency cannot require a utility to install “any additional control technology beyond low NO_x burners” to obtain an AEL.⁶ The parties agree that Congress did not define either term and vary somewhat in their interpretation of Congress’s intent in using the two terms. They then clearly part company. The petitioners argue that the statute plainly prevents the EPA from requiring installation of any equipment in addition to low NO_x burners. The agency responds that section 407 is ambiguous and that its interpretation is reasonable and entitled to deference because both burners and overfire air modify the combustion process.

Our primary inquiry is whether Congress has directly spoken to the question. “If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.” *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837, 842-43 (1984). To determine if Congress so expressed its intent, we apply traditional tools of statutory interpretation to the text at issue as well as to the language

⁵ The relevant text of section 407(b)(1) reads: Not later than eighteen months after enactment of the Clean Air Act Amendments of 1990, the Administrator shall by regulation establish annual allowable emission limitations for nitrogen oxides for the types of utility boilers listed below, which limitations shall not exceed the rates listed below: *Provided*, That the Administrator may set a rate higher than that listed for any type of utility boiler if the Administrator finds that the maximum listed rate for that boiler type cannot be achieved *using low NO_x burner technology*. § 407(b)(1) (emphasis added).

⁶ Section 407(d) reads in relevant part:

The permitting authority shall, upon request of an owner or operator of a unit subject to this section, authorize an emission limitation less stringent than the applicable limitation established under subsection (b)(1) . . . of this section upon a determination that—

(1) a unit subject to subsection (b)(1) cannot meet the applicable limitation using *low NO_x burner technology*. . . . § 407(d) (emphasis added).

Section 407(d) also provides that “[u]nits subject to subsection (b)(1) . . . for which an alternative emission limitation is established shall not be required to install any additional control technology beyond *low NO_x burners*.” *Id.* (emphasis added).

and design of the statute as a whole. *Ohio v. United States Dep't of the Interior*, 880 F.2d 432, 441 (D.C. Cir. 1989) * * *. In the absence of a clearly stated intent we defer to the agency's construction of the statute so long as it is reasonable, under the so-called second step of the *Chevron* analysis. 467 U.S. at 844-45.

We begin with the statutory text. The Supreme Court has declared that "where Congress has used technical words or terms of art, 'it [is] proper to explain them by referring to the art or science to which they [are] appropriate.'" *Corning Glass Works v. Brennan*, 417 U.S. 188, 201 (1974) * * *.

The agency argues that the term "low NO_x burners" includes overfire air because both regulate the combustion process and frequently are referred to in combination in the technical literature, propositions generally supported by the record. Its analysis, however, does not address the dispositive question whether the term "low NO_x burner technology" incorporates the combination of low NO_x burners and overfire air as an established meaning in the field. We conclude that it does not. First, none of the technical literature in the record relied on by the EPA indicates that the term "low NO_x burner technology" is commonly used to refer to the combination of low NO_x burners and overfire air. Indeed, one of the few explicit references to the term "low NO_x burner technology" immediately follows a reference to "overfire air technology," indicating that overfire air is separate from "low NO_x burner technology." *Department of Energy Report to Congress on Clean Coal Technology Program*, (November 1989).

The technical literature included in the rulemaking docket suggests instead that variants of the term "combustion technology" most frequently apply to the combination of low NO_x burners and overfire air. Such routine use of "combustion technology" is consistent with the agency's position that low NO_x burners and overfire air are a common technology because both reduce NO_x emissions as coal burns. It does not establish, however, that Congress intended the different term "low NO_x burner technology" to refer to that combination when the term apparently had not been so used in the field.

We further conclude that the correct reading of section 407 as a whole is that the term "low NO_x burner technology" is an unambiguous reference to low NO_x burners. Statutory text is to be interpreted to give consistent and harmonious effect to each of its provisions. *See, e.g., Citizens to Save Spencer County v. EPA*, 600 F.2d 844, 870 & n. 118 (D.C. Cir. 1979). If "low NO_x burner technology" is interpreted to mean burners only, it harmonizes with Congress's unambiguous statement that a utility seeking an AEL is not required to install technology "beyond low NO_x burners." By contrast, construing the term to include overfire air would allow the Administrator to set emission standards and evaluate them under the AEL provision assuming the use of overfire air, despite the express statutory language that a utility seeking an AEL need not install equipment beyond low NO_x burners. In the absence of any indication that Congress intended to draw a distinction through use of the different language (and the EPA has pointed us to none), the logical reading of "low NO_x burner technology" is that it excludes overfire air.

The AEL provision also demonstrates that Congress intended to tie the obligation of utilities to meet the NO_x emission limit to the use of low NO_x burners. The EPA apparently thought that Congress intended to include overfire air within "low NO_x burner technology" because its exclusion "would enable many utilities to obtain AELs and emit at levels higher than the applicable emission limitation without considering the full range of low NO_x combustion techniques." Final Rule at 13,543. The AEL provision manifests a contrary intent. Congress did not intend to require utilities to consider the "full range of low NO_x combustion techniques" because it expressly provided that utilities not be required to install or use any equipment beyond low NO_x burners in their efforts to comply with the NO_x emission standards.

Likewise, the AEL provision's mandatory language ("The permitting authority *shall* . . . authorize an emission limitation less stringent than the applicable limitation. . . ." (emphasis added)) indicates that the agency's view that Congress intended to limit the issuance of AELs is erroneous.

* * *

The statutory text, structure and history of section 407 thus support the "unmistakable conclusion" that Congress unambiguously intended the term "low NO_x burner technology" to encompass only low NO_x burners, not overfire air. * * * Accordingly, we conclude that the rule exceeds the EPA's statutory authority and must be vacated.

* * *

NOTES

1. On December 19, 1996, the EPA promulgated NO_x emission limitations for utility boilers for Phase II of the Acid Rain Program. 61 Fed. Reg. 67,112 (1996). Those rules will apply to owners and operators of utility boilers on January 1, 2000. Individual states, or a group of states can petition the EPA for approval of an alternative compliance method. 40 C.F.R. § 76.16. The alternative "cap and trade" method would work much like Title IV's allowance program for SO₂. A cap would be set on total emissions from a group of sources and then allocated to individual sources within the group. By reducing the emissions below the allocated level, a source can obtain emission credit that could be banked or sold. An EPA report suggests that a cap and trade program for NO_x would result in greater reductions of both NO_x and SO₂ than a traditional command and control program at less than half the cost. See BNA ENVTL. REP. 1379 (1996). In *Appalachian Power Co. v. EPA*, 135 F.3d 791 (D.C. Cir. 1998) the Court of Appeals for the District of Columbia Circuit largely upheld these rules against a challenge brought by electric utilities and trade industry groups.

2. Substantial information about acid deposition is available on the Internet. References to, and some brief descriptions of the more significant sites, including EPA's Acid Rain Home Page, <http://www.epa.gov/docs/acidrain/ardhome.html>, are found at Thomas M. Paris & William F. Dietrich, *Focusing Sites on Acid Deposition*, 39 ENV'T 3 (1997).

10 INSPECTIONS AND ENFORCEMENT OF STATIONARY SOURCES

A. Inspections and Recordkeeping

Section 114(a) of the Act authorizes the Administrator to require any person who owns or operates an emission source to establish and maintain records, make reports, establish and maintain monitoring equipment, sample emissions or provide such other information as may be reasonably required. Section 114(a)(2) authorizes the Administrator, *or his authorized representative*, to enter the premises of anyone subject to the Act, have access to records and equipment, and conduct inspections as necessary to enforce the law. Perhaps the most litigated issue under this section concerns the meaning of the phrase “authorized representative.” The following case describes the controversy.

STAUFFER CHEMICAL CO. v. EPA

647 F.2d 1075 (10th Cir. 1981)

McWILLIAMS, Circuit Judge.

The principal issue here to be resolved is whether, under Section 114(a)(2) of the Clean Air Act, an employee of a private company under contract with the Environmental Protection Agency (EPA) is an “authorized representative” of the EPA Administrator for the purpose of entering and inspecting the premises of an emission source. 42 U.S.C. § 7414(a)(2) (Supp. II 1978 and Supp. III 1979). The District Court held that an employee of such independent contractor is not an “authorized representative” of the Administrator, and EPA appeals.

Stauffer Chemical Company is a chemical manufacturer whose facilities include a phosphate ore processing plant located in Lincoln County, near Sage, Wyoming, which will hereinafter be referred to as the Leefe Plant. Pursuant to the Clean Air Act, EPA has developed an oversight inspection program which is designed to evaluate the effectiveness of the individual states’ inspection and regulatory procedures as well as to assess the compliance status of the country’s major sources of air pollution. Under this program, state pollution control agencies are responsible for conducting annual inspections at each of the major sources in the state. EPA’s regional offices are responsible for conducting annual oversight inspections at ten percent of the major sources within each state.

Region VIII of the EPA has responsibility for a six-state area encompassing Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. There are about 1,000 major stationary sources of air pollution in these six states, of which 230 are located in Wyoming. The decision as to which sources will be inspected is based on a neutral administrative scheme that focuses on classes of industry, their geographic location, and the frequency of past

inspections. As indicated, to implement its role in the oversight inspection program, Region VIII selected ten percent of its major sources of air pollution for inspection in 1980. Stauffer's Leefe Plant was one of the sources selected for inspection by EPA under the described administrative scheme.

At 10:00 a. m. on April 10, 1980, a team of EPA inspectors arrived unannounced at Stauffer's Leefe Plant. The inspection team consisted of Dr. Charles O'Boyle, an EPA environmental engineer, Lee Gribb, an official of Wyoming's Division of Air Quality, and two employees of GCA Corporation, a North Carolina corporation under contract to EPA to aid in carrying out oversight inspections. It was intended that the GCA employees would make the actual inspection, with supervision from Dr. O'Boyle, who was to be present at all times. Without going into any great detail, Stauffer's employees, upon direction of their supervisors, refused to admit the team of inspectors. Stauffer's employees told the inspection team that it would admit EPA and state officials, but would not admit the two GCA employees unless the latter signed a nondisclosure and hold harmless agreement. The EPA team did not agree to the conditions which Stauffer had imposed, and left the plant premises without making an inspection.

Negotiations then ensued between Stauffer and EPA in an effort to resolve the matter. Although it did impose some additional conditions, Stauffer's basic position was that the two GCA employees would have to sign nondisclosure and hold harmless agreements before being admitted to the plant. Stauffer claimed that it was simply trying to protect its trade secrets.³

When the negotiations between Stauffer and EPA came to a standstill, EPA sought an administrative search warrant. On May 8, 1980, the United States Attorney for the District of Wyoming applied to a United States Magistrate in Cheyenne, Wyoming for an administrative search warrant authorizing EPA to conduct an inspection of the Leefe Plant through the use of the two GCA employees. Supporting affidavits set forth the purpose of the inspection, the need for a warrant, and the neutral administrative scheme underlying the selection of the Stauffer facility. In addition, the application specifically provided that though the GCA employees would make the actual inspection, they would be accompanied by EPA employees.

Based on the showing thus made, the Magistrate issued a warrant for the inspection of Stauffer's Leefe Plant. The warrant authorized "any duly designated enforcement officers and employees of the Environmental Protection Agency, and authorized employees of EPA's contractor, GCA Corporation, who have been duly authorized to conduct inspections as EPA representatives," to enter Stauffer's Leefe Plant during normal operating hours for the purpose of conducting a compliance evaluation oversight inspection pursuant to Section 114 of the Clean Air Act, 42 U.S.C. § 7414.

On the morning of May 13, 1980, the inspection team, which still included two GCA employees, attempted to execute the warrant and inspect the Leefe Plant. The inspection team again appeared unannounced. Stauffer, again, refused to admit the inspection team unless the GCA employees signed a nondisclosure and hold harmless agreement. EPA and the GCA employees refused to agree to Stauffer's conditions, and the team left the plant.

³ We note that the District Court entered a finding of fact in this regard which stated: "Many of the processes used at the Leefe Plant are highly proprietary and involve the application of trade secrets or confidential 'know-how' and information developed by Stauffer during its years of operation." The District Court went on to find that some of these trade secrets, including Stauffer's method for providing fuel for use in calcining phosphate ore, "could be noted by an inspector merely by visual observation of equipment in the facility."

On the afternoon of May 13, 1980, Stauffer went to court. On that date Stauffer filed the following with the United States District Court for the District of Wyoming: (1) an application for a temporary restraining order enjoining EPA and the two GCA employees from executing the warrant, and (2) a motion to quash the warrant. A temporary restraining order issued the same day. Thereafter, on June 20, 1980, after an extended evidentiary hearing, the District Court permanently enjoined EPA from using GCA employees, or employees of other companies under similar contract with EPA, in inspections of any Stauffer plant in Wyoming without the permission of Stauffer Chemical Company. It is from the June 20, 1980, injunctive order that EPA appeals.

The issue as presented on appeal is a very narrow question of statutory interpretation. The starting point in every case involving the construction of a statute is the language of the statute itself. *Greyhound Corp. v. Mt. Hood Stages, Inc.*, 437 U.S. 322, 330 (1978); *Blue Chip Stamps v. Manor Drug Stores*, 421 U.S. 723, 756 (1975) (Powell, J., concurring). Section 114(a)(2) of the Clean Air Act, enacted in 1970, appears as 42 U.S.C. § 7414(a)(2) and provides as follows:

(2) *the Administrator or his authorized representative*, upon presentation of his credentials

(A) *shall have a right of entry* to, upon, or through any premises of such person or in which any records required to be maintained under paragraph (1) of this section are located, and

(B) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under paragraph (1), and sample any emissions which such person is required to sample under paragraph (1). (Emphasis added).

The particular phrase in the foregoing statute with which we are concerned is: “the Administrator or his authorized representative.” The question is whether, in the fact setting described above, the two employees of GCA, the North Carolina corporation under contract with EPA, are “authorized representatives” of the EPA Administrator. As indicated, the trial court held that they were not. We agree.

The term “authorized representative” is not defined in the Clean Air Act. The present statute, therefore, does not expressly state whether employees of a company under contract with the EPA may, or may not, be authorized by the Administrator to serve as his representative. Such being the case, it is up to the courts when called upon, as we now are, to define the term. The touchstone in construing statutory language is legislative intent. *Caminetti v. United States*, 242 U.S. 470, 490 (1917). The EPA suggests that legislative intent may best be ascertained in this case by applying the “plain meaning” test and that an “authorized representative” simply means “any person duly authorized to act or speak for another or others.” EPA cites in support of its position Webster’s New World Dictionary, 2d Coll. Edition 1974. We decline to give such a literal interpretation.

In the belief that the “plain meaning” test does not solve our problem, we turn next to legislative history. Although the relevant legislative history is not entirely clear or consistent, in our view it is nonetheless helpful. As previously stated, Section 114(a)(2) of the Clean Air Act was enacted in 1970. The legislative history of the Clean Air Act, which pertains to that Section, indicates that, upon the disagreeing votes of the two Houses, a committee of conference agreed to a substitute for both the proposed House Bill and Senate Amendment. By way of explanation, the conferees published their discussion of the House Bill, the Senate Amendment and the substitute provision agreed upon, in regard to each section. The conference report stated that in the Senate’s proposed amendment, referred to as Section 116

of Senate Bill 4358, “the Senate *authorized entry and inspection by DHEW personnel* of buildings, facilities, and monitoring equipment for purposes of setting standards and enforcing them.” The conference report then stated that “[t]he provisions of the conference report with regard to inspections, monitoring and entry follow substantially the provisions of the Senate amendment.” (Emphasis added). H.R. (Conf.) Rep. No.91-1783, 91st Cong., 2d Sess., *reprinted in* (1970) U.S.Code Cong. & Ad.News, 5,356, 5,379-81.

The foregoing would seem to indicate that under Section 116 of the Senate Bill, which later substantially became Section 114(a)(2) of the Clean Air Act, an “authorized representative” of the Administrator was restricted to “DHEW personnel.” In this regard we note that the Clean Air Act was administered by the Department of Health, Education and Welfare before EPA was created. The phrase “DHEW personnel” in the legislative history, therefore, must now be read as “EPA personnel.” EPA points out that the legislative history referred to above does not, in so many words, limit such authorization to “DHEW personnel.” We are not impressed by this particular argument. In our view an affirmative grant of authority to a described group precludes a grant of that same authority, by implication, to a different group. In any event, counsel does not suggest that the employees of GCA are “EPA personnel.” They are not, of course. They are GCA personnel.

Furthermore, there is additional legislative history which sheds light on this issue. In 1972 Congress amended the Clean Water Act, to include Section 308, which now appears as 33 U.S.C. § 1318(a)(B). That particular section is virtually identical to Section 114(a)(2) of the Clean Air Act, and provides, in part, as follows:

(B) the *Administrator or his authorized representative*, upon presentation of his credentials

(i) *shall have a right of entry* to, upon, or through any premises in which an effluent source is located or in which any records required to be maintained under clause (A) of this subsection are located, and

(ii) may at reasonable times have access to and copy any records, inspect any monitoring equipment or method required under clause (A), and sample any effluents which the owner or operator of such source is required to sample under such clause. (Emphasis added).

Because Section 308 of the Clean Water Act uses the identical language of Section 114(a)(2) of the Clean Air Act, *i. e.*, “the Administrator or his authorized representative,” we find the legislative history of Section 308 to be relevant to our determination of the present case. The Report of the Senate Public Works Committee, which discusses Section 308 of the Clean Water Act, includes the following commentary:

It should also be noted that the authority to enter, *as under the Clean Air Act*, is reserved to the Administrator and his authorized representatives *which such representatives must be full time employees of the Environmental Protection Agency*. The authority to enter is not extended to contractors with the EPA in pursuit of research and development. S. Rep. No.92-414, 92d Cong., 2d Sess., *reprinted in* [1972] U.S.Code Cong. & Ad.News 3668, 3729. (Emphasis added).

We recognize that the legislative history of Section 308 of the Clean Water Act was published in 1972, whereas Section 114(a)(2) of the Clean Air Act was enacted in 1970. Post-enactment legislative history is generally not to be accorded the same weight as legislative history occurring in connection with the enactment of the statutory language under immediate consideration. There is, however, only a two-year interval between the enactment of Section 114(a)(2) of the Clean Air Act and Section 308 of the Clean Water Act, and there is of course

a close subject-matter relationship between the two acts. In light of such considerations we find the legislative history of Section 308 of the Clean Water Act to be supportive of our holdings. Further, we observe that, if the EPA's position were to be accepted, an employee of a company under contract with the EPA could not be an authorized representative of the Administrator for the purposes of entry and inspection under the Clean Water Act, whereas, such person could be an authorized representative of that same EPA Administrator under the Clean Air Act. Such a result, to us, seems anomalous.

It is on this basis that we conclude that the employees of an independent contractor, such as GCA, are not authorized representatives of the EPA Administrator for the purposes of Section 114(a)(2) of the Clean Air Act. The trial court was correct in so holding and, under the circumstances, properly enjoined the use of the two GCA employees by the EPA in executing the Magistrate's administrative search warrant. Having determined that the warrant was fatally flawed because it authorized GCA employees to go onto Stauffer's Leefe Plant, we need not consider the other objections which Stauffer raised concerning the warrant.

* * *

Judgment affirmed.

NOTES

1. The Court of Appeals for the Ninth Circuit reached the opposite conclusion, on a different reading of the legislative history:

This interpretation [of the legislative history by the 10th Circuit] is unpersuasive. The Conference Committee was confronted with differing language in the Senate and the House versions of the bill, with the Senate version granting broader inspection authority. Section 115 of the Senate bill, for example, broadened the basis upon which inspections could be made and deleted certain requirements imposed by the House. More particularly, section 116(a)(3) of the Senate bill granted inspection authority to "the Secretary or his authorized representatives," while section 112(f) of the house bill limited the right to enter and inspect to "officers or employees." The Conference Committee adopted the Senate version for inspections of stationary sources, section 114(a)(2), 42 U.S.C.A. § 7414(a)(2), and the House version for inspections of motor vehicle manufacturers, section 206(c), 42 U.S.C.A. § 7525(c). Hence, where Congress meant to limit inspections to officers and employees it did so. Congress must be deemed to have understood its choice of the phrase "authorized representative" in contrast to the limited phrase "officers and employees."

Bunker Hill Co. v. EPA, 658 F.2d 1280 (9th Cir. 1981). See also § 114(c) of the Act which refers to "officers, employees or authorized representatives." The Ninth Circuit found the use of the disjunctive here to indicate Congressional awareness that authorized representatives were a separate category of individuals. *Id.* 658 F.2d 1283, n.1.

2. In *United States v. Stauffer Chemical Company*, 684 F.2d 1174 (6th Cir. 1982) *aff'd*, 464 U.S. 165 (1984), the Court of Appeals for the Sixth Circuit held that the United States was barred from relitigating the "authorized representative" issue against another facility owned by Stauffer, but in a different jurisdiction, under the doctrine of collateral estoppel. The

appellate court nonetheless ruled on the merits, reaching the same conclusion as the Tenth Circuit. The Supreme Court affirmed on the collateral estoppel issue without reaching the merits of the claim.

3. Recall the standard of review for agency interpretation of statutes which they are charged with administering, as announced by the Supreme Court in *Chevron, USA, Inc. v. Natural Resources Defense Council*, 467 U.S. 837 (1984), *supra* at Chapter 9. How should this case be viewed under that standard?

4. The 1990 Amendments significantly enhanced EPA's authority to require additional record-keeping and monitoring of stationary sources. § 114(a)(1), (3). In particular, owners and operators of major stationary sources are subject to new monitoring, record-keeping and reporting requirements, including a requirement to submit compliance certifications. Submission of these certifications will enable both the agencies and the public to ascertain quickly whether the source is complying with its permit. Noncompliance may lead to enforcement by the agency or a citizen suit under § 304 of the Act.

5. For a comprehensive treatment of the Clean Air Act's inspection program see Arnold W. Reitze, Jr. & Carol S. Holmes, *Inspections Under the Clean Air Act*, 1 ENVTL. LAW. 29 (1994).

DOW CHEMICAL CO. V. UNITED STATES

476 U.S. 227 (1986)

Chief Justice BURGER delivered the opinion of the Court.

We granted certiorari to review the holding of the Court of Appeals (a) that the Environmental Protection Agency's aerial observation of petitioner's plant complex did not exceed EPA's statutory investigatory authority, and (b) that EPA's aerial photography of petitioner's 2,000-acre plant complex without a warrant was not a search under the Fourth Amendment.

I.

Petitioner Dow Chemical Co. operates a 2,000-acre facility manufacturing chemicals at Midland, Michigan. The facility consists of numerous covered buildings, with manufacturing equipment and piping conduits located between the various buildings exposed to visual observation from the air. At all times, Dow has maintained elaborate security around the perimeter of the complex barring ground-level public views of these areas. It also investigates any low-level flights by aircraft over the facility. Dow has not undertaken, however, to conceal all manufacturing equipment within the complex from aerial views. Dow maintains that the cost of covering its exposed equipment would be prohibitive.

In early 1978, enforcement officials of EPA, with Dow's consent, made an on-site inspection of two powerplants in this complex. A subsequent EPA request for a second inspection, however, was denied, and EPA did not thereafter seek an administrative search warrant. Instead, EPA employed a commercial aerial photographer, using a standard floor-mounted, precision aerial mapping camera, to take photographs of the facility from

altitudes of 12,000, 3,000, and 1,200 feet. At all times the aircraft was lawfully within navigable airspace. See 49 U.S.C. App. § 1304; 14 C.F.R. § 91.79 (1985).

EPA did not inform Dow of this aerial photography, but when Dow became aware of it, Dow brought suit in the District Court alleging that EPA's action violated the Fourth Amendment and was beyond EPA's statutory investigative authority. The District Court granted Dow's motion for summary judgment on the ground that EPA had no authority to take aerial photographs and that doing so was a search violating the Fourth Amendment. EPA was permanently enjoined from taking aerial photographs of Dow's premises and from disseminating, releasing or copying the photographs already taken. 536 F.Supp. 1355 (E.D. Mich. 1982).

* * *

The Court of Appeals reversed. 749 F.2d 307 (6th Cir. 1984).

* * *

II.

The photographs at issue in this case are essentially like those commonly used in map-making. Any person with an airplane and an aerial camera could readily duplicate them. In common with much else, the technology of photography has changed in this century. These developments have enhanced industrial processes, and indeed all areas of life; they have also enhanced law enforcement techniques. Whether they may be employed by competitors to penetrate trade secrets is not a question presented in this case. Governments do not generally seek to appropriate trade secrets of the private sector, and the right to be free of appropriation of trade secrets is protected by law.

Dow nevertheless relies heavily on its claim that trade secret laws protect it from any aerial photography of this industrial complex by its competitors, and that this protection is relevant to our analysis of such photography under the Fourth Amendment. That such photography might be barred by state law with regard to competitors, however, is irrelevant to the questions presented here. State tort law governing unfair competition does not define the limits of the Fourth Amendment. *Cf. Oliver v. United States, supra* (trespass law does not necessarily define limits of Fourth Amendment). The Government is seeking these photographs in order to regulate, not to compete with, Dow. If the Government were to use the photographs to compete with Dow, Dow might have a Fifth Amendment "taking" claim. Indeed, Dow alleged such a claim in its complaint, but the District Court dismissed it without prejudice. But even trade secret laws would not bar all forms of photography of this industrial complex; rather, only photography with an intent to use any trade secrets revealed by the photographs may be proscribed. Hence, there is no prohibition of photographs taken by a casual passenger on an airliner, or those taken by a company producing maps for its map-making purposes.

Dow claims first that EPA has no authority to use aerial photography to implement its statutory authority for "site inspection" under § 114(a) of the Clean Air Act, 42 U.S.C. § 7414(a); second, Dow claims EPA's use of aerial photography was a "search" of an area that, notwithstanding the large size of the plant, was within an "industrial curtilage" rather than an "open field," and that it had a reasonable expectation of privacy from such photography protected by the Fourth Amendment.

III.

Congress has vested in EPA certain investigatory and enforcement authority, without spelling out precisely how this authority was to be exercised in all the myriad circumstances that might arise in monitoring matters relating to clean air and water standards. When

Congress invests an agency with enforcement and investigatory authority, it is not necessary to identify explicitly each and every technique that may be used in the course of executing the statutory mission. Aerial observation authority, for example, is not usually expressly extended to police for traffic control, but it could hardly be thought necessary for a legislative body to tell police that aerial observation could be employed for traffic control of a metropolitan area, or to expressly authorize police to send messages to ground highway patrols that a particular over-the-road truck was traveling in excess of 55 miles per hour. Common sense and ordinary human experience teaches that traffic violators are apprehended by observation.

Regulatory or enforcement authority generally carries with it all the modes of inquiry and investigation traditionally employed or useful to execute the authority granted. Environmental standards such as clean air and clean water cannot be enforced only in libraries and laboratories, helpful as those institutions may be.

Under § 114(a)(2), the Clean Air Act provides that “upon presentation of . . . credentials,” EPA has a “right of entry to, upon, or through any premises.” 42 U.S.C. § 7414(a)(2)(A). Dow argues this limited grant of authority to enter does not authorize any aerial observation. In particular, Dow argues that unannounced aerial observation deprives Dow of its right to be informed that an inspection will be made or has occurred, and its right to claim confidentiality of the information contained in the places to be photographed, as provided in § 114(a) and (c), 42 U.S.C. § 7414(a), (c). It is not claimed that EPA has disclosed any of the photographs outside the agency.

Section 114(a), however, appears to expand, not restrict, EPA’s general powers to investigate. Nor is there any suggestion in the statute that the powers conferred by this section are intended to be exclusive. There is no claim that EPA is prohibited from taking photographs from a ground-level location accessible to the general public. The EPA, as a regulatory and enforcement agency, needs no explicit statutory provision to employ methods of observation commonly available to the public at large: we hold that the use of aerial observation and photography is within the EPA’s statutory authority.

IV.

We turn now to Dow’s contention that taking aerial photographs constituted a search without a warrant, thereby violating Dow’s rights under the Fourth Amendment. In making this contention, however, Dow concedes that a simple fly-over with naked-eye observation, or the taking of a photograph from a nearby hillside overlooking such a facility, would give rise to no Fourth Amendment problem.

In *California v. Ciraolo*, 476 U.S. 207 (1986), decided today, we hold that naked-eye aerial observation from an altitude of 1,000 feet of a backyard within the curtilage of a home does not constitute a search under the Fourth Amendment.

In the instant case, two additional Fourth Amendment claims are presented: whether the common-law “curtilage” doctrine encompasses a large industrial complex such as Dow’s, and whether photography employing an aerial mapping camera is permissible in this context. Dow argues that an industrial plant, even one occupying 2,000 acres, does not fall within the “open fields” doctrine of *Oliver v. United States* but rather is an “industrial curtilage” having constitutional protection equivalent to that of the curtilage of a private home. Dow further contends that any aerial photography of this “industrial curtilage” intrudes upon its reasonable expectations of privacy. Plainly a business establishment or an industrial or commercial facility enjoys certain protections under the Fourth Amendment. See *Marshall v. Barlow’s, Inc.*, 436 U.S. 307 (1978); See *v. City of Seattle*, 387 U.S. 541 (1967).

Two lines of cases are relevant to the inquiry: the curtilage doctrine and the “open fields” doctrine. The curtilage area immediately surrounding a private house has long been

given protection as a place where the occupants have a reasonable and legitimate expectation of privacy that society is prepared to accept. See *Ciraolo, supra*.

As the curtilage doctrine evolved to protect much the same kind of privacy as that covering the interior of a structure, the contrasting “open fields” doctrine evolved as well. From *Hester v. United States*, 265 U.S. 57 (1924), to *Oliver v. United States*, 466 U.S. 170 (1984), the Court has drawn a line as to what expectations are reasonable in the open areas beyond the curtilage of a dwelling; “open fields do not provide the setting for those intimate activities that the [Fourth] Amendment is intended to shelter from governmental interference or surveillance.” *Oliver*, 466 U.S., at 179. In *Oliver*, we held that “an individual may not legitimately demand privacy for activities out of doors in fields, except in the area immediately surrounding the home.” *Id.*, at 178. To fall within the open fields doctrine the area “need be neither ‘open’ nor a ‘field’ as those terms are used in common speech.” *Id.*, at 180, n. 11.

Dow plainly has a reasonable, legitimate, and objective expectation of privacy within the interior of its covered buildings, and it is equally clear that expectation is one society is prepared to observe. *E.g., See v. City of Seattle, supra*. Moreover, it could hardly be expected that Dow would erect a huge cover over a 2,000-acre tract. In contending that its entire enclosed plant complex is an “industrial curtilage,” Dow argues that its exposed manufacturing facilities are analogous to the curtilage surrounding a home because it has taken every possible step to bar access from ground level.

The Court of Appeals held that whatever the limits of an “industrial curtilage” barring ground-level intrusions into Dow’s private areas, the open areas exposed here were more analogous to “open fields” than to a curtilage for purposes of aerial observation. 749 F.2d, at 312-314. In *Oliver*, the Court described the curtilage of a dwelling as “the area to which extends the intimate activity associated with the ‘sanctity of a man’s home and the privacies of life.’” *Oliver, supra*, 466 U.S., at 180 (quoting *Boyd v. United States*, 116 U.S. 616, 630 (1886)). See *California v. Ciraolo, supra*. The intimate activities associated with family privacy and the home and its curtilage simply do not reach the outdoor areas or spaces between structures and buildings of a manufacturing plant.

Admittedly, Dow’s enclosed plant complex, like the area in *Oliver*, does not fall precisely within the “open fields” doctrine. The area at issue here can perhaps be seen as falling somewhere between “open fields” and curtilage, but lacking some of the critical characteristics of both. Dow’s inner manufacturing areas are elaborately secured to ensure they are not open or exposed to the public from the ground. Any actual physical entry by EPA into any enclosed area would raise significantly different questions, because “[t]he businessman, like the occupant of a residence, has a constitutional right to go about his business free from unreasonable official entries upon his private commercial property.” See *v. City of Seattle, supra*, 387 U.S., at 543. The narrow issue raised by Dow’s claim of search and seizure, however, concerns aerial observation of a 2,000-acre outdoor manufacturing facility without physical entry.

We pointed out in *Donovan v. Dewey*, 452 U.S. 594, 598-599 (1981), that the Government has “greater latitude to conduct warrantless inspections of commercial property” because “the expectation of privacy that the owner of commercial property enjoys in such property differs significantly from the sanctity accorded an individual’s home.” We emphasized that unlike a homeowner’s interest in his dwelling, “[t]he interest of the owner of commercial property is not one in being free from any inspections.” *Id.*, at 599. And with regard to regulatory inspections, we have held that “[w]hat is observable by the public is observable without a warrant, by the Government inspector as well.” *Marshall v. Barlow’s, Inc.*, 436 U.S., at 315 (footnote omitted).

Oliver recognized that in the open field context, “the public and police lawfully may survey lands from the air.” 466 U.S. at 179 (footnote omitted). Here, EPA was not employing some unique sensory device that, for example, could penetrate the walls of buildings and record conversations in Dow’s plants, offices or laboratories, but rather a conventional, albeit precise, commercial camera commonly used in map-making. The Government asserts it has not yet enlarged the photographs to any significant degree, but Dow points out that simple magnification permits identification of objects such as wires as small as one-half inch diameter.

It may well be, as the Government concedes, that surveillance of private property by using highly sophisticated surveillance equipment not generally available to the public, such as satellite technology, might be constitutionally proscribed absent a warrant. But the photographs here are not so revealing of intimate details as to raise constitutional concerns. Although they undoubtedly give EPA more detailed information than naked-eye views, they remain limited to an outline of the facility’s buildings and equipment. The mere fact that human vision is enhanced somewhat, at least to the degree here, does not give rise to constitutional problems. An electronic device to penetrate walls or windows so as to hear and record confidential discussions of chemical formulae or other trade secrets would raise very different and far more serious questions; other protections such as trade secret laws are available to protect commercial activities from private surveillance by competitors.

We conclude that the open areas of an industrial plant complex with numerous plant structures spread over an area of 2,000 acres are not analogous to the “curtilage” of a dwelling for purposes of aerial surveillance; such an industrial complex is more comparable to an open field and as such it is open to the view and observation of persons in aircraft lawfully in the public airspace immediately above or sufficiently near the area for the reach of cameras.

We hold that the taking of aerial photographs of an industrial plant complex from navigable airspace is not a search prohibited by the Fourth Amendment.

Affirmed.

NOTES

1. In his summary of the facts, Justice Burger notes that EPA had made an initial inspection of the facility with Dow’s consent. A subsequent request to Dow for a second inspection was denied, which led to the aerial inspection made without Dow’s consent. Why was Dow’s consent necessary for the initial inspection? Did Congress intend for EPA to seek the prior consent of a company to be inspected? See §§ 114(b), (d)(1). What problems might prior consent raise for the inspection and enforcement program?

2. Congress did not provide in the Clean Air Act for warrantless searches, as it has done in some other regulatory statutes. See e.g., Surface Mining Control and Reclamation Act, § 517, 30 U.S.C. § 1267. Accordingly, absent consent, EPA must obtain a warrant prior to entry on the premises of a regulated source. *Public Service Co. of Indiana v. EPA*, 682 F.2d 626 (7th Cir. 1982), cert. denied, 459 U.S. 1127. However, EPA may conduct aerial inspections without a warrant. See also *Air Pollution Variance Board v. Western Alfalfa Corp.*, 416 U.S. 861 (1974) wherein the Court held that violations of the Act observed from an open field may be cited without a warrant.

3. What standards govern issuance of a warrant under statutes such as the Clean Air Act? In *Marshall v. Barlows*, 436 U.S. 307 (1978) the Supreme Court required the Secretary of Labor to obtain a warrant for inspections under the Occupational Safety and Health Act. In its decision, the Court described the showing required for issuance of an administrative warrant as follows:

Probable cause in the criminal law sense is not required. For purposes of an administrative search such as this, probable cause justifying the issuance of a warrant may be based not only on specific evidence of an existing violation, but also on a "showing that reasonable legislative or administrative standards for conducting . . . an inspection are satisfied." . . . A warrant showing that a specific business has been chosen for an OSHA search on the basis of a general administrative plan for enforcement of the Act derived from neutral sources . . . would protect an employer's Fourth Amendment rights.

Id. at 320-321. If, to obtain a warrant, EPA need only show a general plan for choosing a site to inspect, does the warrant requirement afford any substantial protection? As the excerpt from *Marshall* suggests, the Fourth Amendment provides that "no warrant shall issue, but upon probable cause." "Probable cause" for what? Are the standards adopted by the Court in *Marshall* consistent with this requirement for "probable cause"?

4. EPA may obtain administrative search warrants *ex parte*, without a showing of a need for surprise. *Bunker Hill Co. v. EPA*, 658 F.2d 1280 (9th Cir. 1981).

B. Enforcement

With the exception of the emergency authority provided for at § 303 of the Act, and discussed in greater detail below, stationary sources and mobile sources are treated differently under the Clean Air Act for purposes of enforcement. The latter subject is addressed separately in the section on mobile sources. *Infra* at Chapter 12. The principal enforcement tools for stationary sources are set out at §§ 113 and 120 of the Act. The 1990 Amendments to the Act strengthened the general enforcement powers significantly. A brief review of the enforcement provisions is set forth below.

Administrative Remedies. Section 113(a) of the Act prescribes administrative remedies for violations of the Act. Under § 113(a)(1), the Administrator "shall notify" the state and any person in violation of a SIP. If the violation extends for 30 days after the Notice of Violation, the Administrator "may issue" a compliance order. The order must specify a time for compliance, which cannot exceed one year. § 113(a)(4). Further, it cannot take effect until the person to whom it is issued has an opportunity to confer with EPA concerning the alleged violation. *Id.* As an alternative to issuing the compliance order the Administrator may commence a civil action in accordance with § 113(b).

The value of administrative action as an enforcement tool was greatly enhanced by the provision in the 1990 Amendments allowing administrative assessment of civil penalties. § 113(d). Under this provision, which is described in greater detail below, the Administrator may issue civil penalties of up to \$200,000 for virtually any violation of the Act or state implementation plan.

Federally Assumed Enforcement of a SIP. Section 113(a)(2) authorizes the EPA to assume enforcement of a SIP or an approved permit program under Title V of the Act where violations of the SIP or the permit program “are so widespread that such violations appear to result from a failure of a State . . . to enforce the plan or permit program effectively.” In addition, § 113(a)(5) provides that where a state is not acting in compliance with any requirement relating to construction of new sources or modification of existing sources, the EPA may issue an order prohibiting construction or modification of any major stationary source in the SIP area that is out of compliance. An injunction against such construction or modification may also be obtained.

Direct Federal Enforcement. Section 113(a)(3) authorizes direct federal enforcement by EPA for virtually any violation of Titles I, III, IV, V or VI of the Act. The only substantial limit imposed on EPA is the requirement that it give 30 days’ prior notice to the state and affected operator for permit and SIP violations, in those states with approved SIPs.

Civil Actions. Section 113(b) of the Act authorizes the Administrator to commence civil actions for temporary or injunctive relief, or to assess and recover a penalty of not more than \$25,000 per day. Such actions “shall, as appropriate” be commenced “against any person that is the owner or operator of an affected source, a major emitting facility, or a major stationary source” and “may” be commenced against any other person, whenever such person—(1) violates a SIP during federally assumed enforcement of the SIP or after 30 days’ notice; (2) violates a requirement of Title I, IV, V, VI or § 303 (relating to emergency powers); or (3) attempts to construct or modify any source upon a finding that the source failed to comply with new source requirements.

Civil Penalties. A key provision of the 1990 Amendments extends to EPA the authority to assess civil penalties. Before those amendments, EPA had to convince overworked lawyers from the Justice Department or the local U.S. Attorney’s Office to bring a civil action. Civil penalties of up to \$25,000 per day of violation may be assessed under an administrative order so long as the total penalty does not exceed \$200,000. § 113(d)(1). The category of violations for which penalties may be assessed generally tracks the language of § 113(b) relating to civil actions. The criteria to be used for assessing civil penalties, whether by administrative or court order, are set out at § 113(e), and include the size of the business, the violator’s compliance history and good faith efforts at compliance, the duration of the violation, the economic benefit of the violation, and the seriousness of the violation.

Field citation authority is also authorized by the 1990 Amendments. Under § 113(d)(3), EPA may authorize its officers and employees to assess penalties of up to \$5,000 for minor violations of law. § 113(d)(3).

All administrative penalties are subject to formal adjudicatory hearings in accordance with the Administrative Procedure Act. § 113(d)(2). Administrative appeals from the decision of an administrative law judge may be taken to the Environmental Appeals Board (EAB). General rules governing the hearings and appeals process are found at 40 C.F.R. part 22.

The 1990 Amendments also added a unique “bounty” provision. Under § 113(f), EPA may grant awards not to exceed \$10,000 to any person who furnishes information or services that lead to a criminal conviction or the issuance of a civil penalty for a wide variety of violations of the law.

Noncompliance Penalties. Penalties assessed under §§ 113(b) and (d) are in addition to any penalties that may be imposed by the EPA or the state under § 120 of the Act. § 120(f). Such “noncompliance penalties” are required to be assessed for certain broad categories of violations in an amount “no less than the economic value” derived from delayed compliance. §§ 120(a)(2)(A); 120(d). It is EPA’s policy, however, to offset that amount of a penalty paid

under § 113(b), but attributable to the economic value factor of § 120, against a penalty imposed under § 120. *EPA Civil Penalty Policy for Major Source Violators*, 8 ENV. REP. (Current Developments) 2011, 2018 (1978). Rules relating to the assessment and collection of noncompliance penalties are found at 40 C.F.R. part 66 (1997). Among other things, those rules provide a right of appeal to an administrative law judge (40 C.F.R. part 66, subpart J (1997)), and a right to review before the EAB. 40 C.F.R. § 66.95(c) (1997).

EPA employs a computer model called "BEN" to calculate the economic benefit from illegal conduct. EPA's BEN Model Coordinator has suggested that BEN "yields a reliable objective dollar figure." Jonathan D. Libber, *Penalty Assessment at the Environmental Protection Agency: A View from Inside*, 6 NAT'L. ENVTL. ENF. J. 3, 6 (April, 1991). But that conclusion has been criticized by at least one economist formerly employed by the EPA. Robert H. Fuhrman, *A Discussion of Technical Problems with EPA's BEN Model*, 1 ENVTL. LAW. 561 (1995); see also, Robert H. Fuhrman, *Comments on Mr. Libber's Article on the EPA Civil Penalty Assessment Model*, 6 NAT'L. ENVTL. ENF. J. 20 (Dec. 1991/Jan. 1992). Among Fuhrman's criticisms was EPA's failure to engage in rulemaking before using the BEN Model. In response to an industry petition seeking such a rulemaking, the EPA has solicited public comment on BEN, though it has not committed to engaging in rulemaking. 61 Fed. Reg. 53,026 (1996).

Criminal Sanctions. The 1990 Amendments incorporated tough, new criminal sanctions into § 113(c) of the Act. Fines of up to \$1,000,000 and prison terms of 15 years may be imposed. Furthermore, penalties may be doubled for second offenses. Although criminal sanctions may be imposed only for "knowing" violations of the law, the detailed compliance certification requirements imposed under § 114(a)(3) of the Act should make it much easier for EPA to support criminal actions against recalcitrant operators.

Citizen Suits. Section 304 of the Act authorizes a private right of action by affected persons directly against any person who is in violation of the law. § 304(a)(1), (3). In addition, private citizens may bring an action against the Administrator for failing to perform any nondiscretionary duty. § 304(a)(2). Such actions must be preceded by a 60 day notice (see *Council of Commuter Organizations v. Metropolitan Transportation Authority*, 683 F.2d 663 (2d Cir. 1982)), and may be filed only in the judicial district where the source is located. § 304(c). Prevailing parties may be awarded the costs of litigation including attorney fees. § 302(d). See also *Ruckelshaus v. Sierra Club*, 463 U.S. 68 (1983). See *infra*, Chapter 13. One significant change to § 304 included in the 1990 Amendments is a provision that allows citizen suits for past as well as present violations of the law "if there is evidence that the alleged violation has been repeated." § 304(a)(1). This effectively overturns the Supreme Court's decision in *Gwaltney of Smithfield, Ltd. v. Chesapeake Bay Foundation*, 484 U.S. 49 (1987), as it applied to the Clean Air Act. One commentator has predicted an "onslaught of Clean Air Act citizens suits" as a result of the 1990 amendments, especially because of the new provisions for compliance certification which will provide a "relative cheap and efficient" means for identifying violations of the law. Roy S. Belden, *Preparing for the Onslaught of Clean Air Act Citizen Suits: A Review of Strategies and Defenses*, 1 ENVTL. LAW. 377 (1995).

Emergency Powers. One final enforcement tool worthy of note is set forth at § 303. Under this section, which is common to the Clean Water Act and Resource Conservation and Recovery Act, EPA may file suit to abate any air pollution that presents "an imminent and substantial endangerment to the health of persons" whether or not there has been a violation of the law. In the alternative, if it is not practicable to commence a civil action, the Administrator may issue such orders as may be necessary to protect the public health. The order may not be effective for more than 24 hours unless the Administrator commences a civil action in accordance with § 303.

Below are several cases which explore some of the problems raised by the Clean Air Act's enforcement provisions. A detailed discussion of the enforcement provisions of the Clean Air Act is found in James Miskiewicz & John S. Rudd, *Civil and Criminal Enforcement of the Clean Air Act After the 1990 Amendments*, 9 PACE ENVTL. L. REV. 281 (1992).

CITY OF SEABROOK V. COSTLE
659 F.2d 1371 (5th Cir. 1981)

REAVLEY, Circuit Judge:

Plaintiffs brought this action in federal district court pursuant to § 304(a)(2) of the Clean Air Act, 42 U.S.C. § 7604(a)(2) (Supp. III 1979), to compel the Administrator of the Environmental Protection Agency to perform allegedly nondiscretionary duties imposed by the Act. The district court dismissed the suit for lack of subject matter jurisdiction. Plaintiffs appeal. We affirm.

This suit is a companion to the petitions which we have denied today in *City of Seabrook v. United States Environmental Protection Agency*, 659 F.2d 1349 (5th Cir. 1981). The parties in both cases are the same. The complaint alleges many of the same violations of the Clean Air Act alleged in the petitions.

* * *

II. FAILURE TO GIVE NOTIFICATION REQUIRED BY SECTION 113 OF THE ACT

Section 113 of the Clean Air Act provides in pertinent part:

(a)(1) Whenever, on the basis of any information available to him, the Administrator *finds* that any person is in violation of any requirement of an applicable implementation plan, the Administrator *shall* notify the person in violation of the plan and the State in which the plan applies of such finding. . . .

(2) Whenever, on the basis of information available to him, the Administrator *finds* that violations of an applicable implementation plan are so widespread that such violations appear to result from a failure of the State in which the plan applies to enforce the plan effectively, he *shall* so notify the State. If the Administrator *finds* such failure extends beyond the 30th day after such notice, he *shall* give public notice of such finding.

(Emphasis added). Even if the words "shall notify" impose a nondiscretionary duty on the Administrator to give notifications under certain circumstances, plaintiffs did not allege a failure to perform a nondiscretionary duty entitling them to bring a "citizens' suit" under § 304(a)(2).

Plaintiffs do not allege that the Administrator has ever made any finding either that "any person is in violation of any requirement of [the Texas] implementation plan" or that "violations of [the Texas] implementation plan are so widespread that such violations appear to result from a failure of the State . . . to enforce the plan effectively." Nor do plaintiffs ask leave to amend their complaint to make such allegations. Instead, plaintiffs argue that the Administrator had a nondiscretionary duty to make such findings on the basis of information available to him. We cannot agree with this argument.

A district court has jurisdiction under § 304(a)(2) only if the plaintiff has alleged a duty which is not discretionary under the Clean Air Act. The language of neither § 113 nor any other section of the statute imposes a mandatory duty on the Administrator to make a finding every time some information concerning a possible violation of a SIP is brought to his attention. In the absence of a clear statutory mandate, we decline to impose such a duty on the Administrator.

The branches of government charged with the investigation of violations of the law and with enforcement of the law have traditionally been afforded broad discretion in carrying out these duties. We have held, for example, that the Attorney General's discretion "in choosing whether to prosecute or not to prosecute . . . is absolute." *Smith v. United States*, 375 F.2d 243, 247 (5th Cir.), cert. denied, 389 U.S. 841 (1967). The courts have recognized that, at least in the absence of a contrary statutory command, administrative agencies should be afforded similarly broad discretion. See *Rockford Redi-Mix Co. v. Zipp*, 632 F.2d 30, 32 n.5 (7th Cir. 1980) (collecting numerous cases holding NLRB's decision not to issue an unfair labor practice complaint nonreviewable), cert. denied, *Countryman v. Zipp*, 450 U.S. 929 (1981); *Kixmiller v. SEC*, 492 F.2d 641, 645 (D.C. Cir. 1974) ("An agency's decision to refrain from an investigation or an enforcement action is generally unreviewable . . ."). This principle of almost absolute discretion in initiating enforcement action should apply with equal force to the decision to take the preliminary investigatory steps that would provide the basis for enforcement action.

Given this tradition of broad prosecutorial discretion, we do not think that § 113(a) should be interpreted to impose a nondiscretionary duty to make findings whenever a violation of a SIP is alleged.

Plaintiffs rely heavily on *Wisconsin's Environmental Decade, Inc. v. Wisconsin Power & Light, Inc.*, 395 F. Supp. 313 (W.D. Wis. 1975), in which the court held that the Administrator does indeed have a nondiscretionary duty under § 113(a) to make a finding when information concerning a possible violation is made available to him. *Id.* at 320. The *Wisconsin Environmental* court acknowledged that its interpretation found clear support in neither the statutory language nor its legislative history. *Id.* The court first held that the Administrator had a nondiscretionary duty to issue a notice of violation under § 113(a) whenever he actually did find a violation. *Id.* at 317-20.³ Having begun with that conclusion, the district judge reasoned,

I must also conclude that when presented with evidence indicating that a violation may exist, the Administrator must make a finding that a violation does or does not exist. Because I consider that Congress made a deliberate decision that the duty to issue notices of violation should be non-discretionary, I cannot accept an interpretation of the language of § (113(a)) which would make this duty an empty one by permitting the Administrator to make a finding or not make a finding as he

³ In reaching this initial conclusion, the *Wisconsin Environmental* court relied on the maxim that the word "shall" is normally interpreted to impose a mandatory duty. See 395 F.Supp. at 318. We note that, when duties within the traditional realm of prosecutorial discretion are involved, the courts have not found this maxim controlling. See, e. g., *Sierra Club v. Train*, 557 F.2d 485, 488-91 (5th Cir. 1977) (construing a clause of the Federal Water Pollution Control Act quite similar to § 113(a)); *Inmates of Attica Correctional Facility v. Rockefeller*, 477 F.2d 375, 381 (2d Cir. 1973) (mandatory nature of the statutory term "required" is insufficient to evince congressional intent to bar the exercise of prosecutorial discretion).

or she sees fit. *Contra, New Mexico Citizens v. Train*, 6 E.R.C. 1061 (D. N.M. 1974), 395 F. Supp. at 320.

We think that the *Wisconsin Environmental* court's creation of a nondiscretionary duty which is not imposed by the statutory language pays too little heed to the doctrine of prosecutorial discretion. One of the principal bases for the doctrine is judicial recognition that enforcement agencies have only limited resources at their command. The enforcement agencies are duty-bound to allocate those resources in the interest of the general public as they perceive it, not in the causes deemed most important by individual citizens. The *Wisconsin Environmental* court would require the EPA to investigate and make considered findings on every alleged violation, without regard to the significance of the alleged violation, the reliability or credibility of the information received, or the most efficient allocation of the agency's resources in carrying out its many statutory duties.

The *Wisconsin Environmental* court's argument that the duty to issue a notice upon finding a violation would be an "empty one" if the Administrator could avoid the duty by failing to make a finding is based ultimately on the assumption that the EPA will not carry out its investigatory duties in good faith. This is an assumption which, in the absence of clear statutory language or legislative history, we are unwilling to attribute to Congress. We hold that § 113(a) does not impose a nondiscretionary duty to make a finding on every alleged violation of a SIP. Therefore, the district court correctly decided that § 304(a)(2) conferred no jurisdiction over plaintiffs' claim. *See Sierra Club v. Train*, 557 F.2d 485, 491 (5th Cir. 1977) (when no mandatory duty is alleged, claim is properly dismissed for lack of subject matter jurisdiction).

The judgment of the district court is AFFIRMED.

NOTES

1. The Court of Appeals for the Second Circuit appears to take a contrary view as to the nondiscretionary nature of the requirement at § 113(a) that EPA issue a notice of violation. *See Council of Commuter Organizations v. Metropolitan Transportation Authority*, 683 F.2d 663, 671-72 (2d Cir. 1982). Which court is correct as a matter of law? Which view is more likely to encourage compliance with the law?

2. The 1990 Amendments expanded the scope of § 113(a)(1) to include permit violations as well as plan violations. As previously noted, they also provided for the issuance of administrative civil penalties so long as the amount does not exceed \$25,000 per violation or a \$200,000 total penalty.

3. In *City of Seabrook*, the Court of Appeals for the Fifth Circuit relies substantially on notions of prosecutorial discretion to support its conclusion that the notice requirement of § 113(a) is mandatory. At the time that this case was decided, the only consequence of a notice of violation was that it triggered a 30 day period after which a compliance order could be issued or a civil action filed. Given the limited effect of a notice of violation, is the court's analogy sound? What were the consequences for issuance of a notice as compared with a decision to prosecute? How have the 1990 Amendments changed the law in this area?

4. In *City of Seabrook*, the court finds that EPA has discretion to issue the preliminary notice of violation, despite Congress' use of the word "shall" to describe the Administrator's obligation. Compare § 113(b) of the Act:

The Administrator *shall, as appropriate*, in the case of any person that is the owner or operator of an affected source, a major emitting facility, or a major stationary source, and *may*, in the case of any other person, commence a civil action for a permanent or temporary injunction, or to assess and recover a civil penalty . . . [whenever such person violates any of several enumerated provisions of the law].

If Congress had intended to grant EPA discretion to issue a notice of violation should it not also be deemed to have discretion to commence a civil action which, after all, is more closely akin to prosecutorial discretion? Is this what Congress intended by its use of the word “shall, as appropriate” to describe EPA’s obligation toward major sources, and “may” to describe EPA’s obligation toward all other sources?

5. The Fifth Circuit states that “the *Wisconsin Environmental* court would require EPA to investigate and make considered findings on every alleged violation, without regard to the significance of the alleged violation, the reliability or credibility of the information received, or the most efficient allocation of the agency’s resources. . . .” 659 F.2d at 1375. Is the burden of the *Wisconsin Environmental* decision as onerous as the Fifth Circuit suggests?

6. When should EPA take action against a violator in a state with an approved SIP? In a 1984 memorandum entitled “Guidance on Timely and Appropriate EPA/State Enforcement Response for Significant Air Violators,” EPA announced a policy which allows states up to five months to initiate formal enforcement action against significant violators before EPA may issue a Notice of Violation. See Joel Mintz, *EPA Enforcement: Critical Assessment Yields Mixed Review*, ENVTL. FORUM (ELI), 12, 14 (November, 1984).

7. In recent years, many states have adopted laws designed to encourage companies to conduct self-audits. One incentive for promoting such audits is to make them privileged from disclosure. See e.g., OR. REV. STAT. 36-468.963. Some states have also granted companies immunity for violations discovered during an audit, if such violations are promptly disclosed to the appropriate authorities, and appropriate remedial measures are taken. See e.g., COLO. REV. STAT. ANN. §§ 13-25-126.5; 114.5 (1995). The EPA has expressed reservations about some state audit policies, and has asked some states to change their laws before it will delegate certain responsibilities under the Clean Air Act. E. Lynn Grayson & Christina M. Riewer, *EPA’s Audit Policy and State Audit Privilege Laws: Moving Beyond Command and Control?*, 27 ENVTL. L. RPTR. 10243, 10246 (News & Analysis, May, 1997). See also, *Effect of Audit Immunity/Privilege Laws on States’ Ability to Enforce Title V Requirements*, (April 5, 1996), <http://www.epa.gov/ttncaaa1/title5/auditmem.htm>. EPA has, however, adopted its own audit incentives policy, 60 Fed. Reg. 66,706 (1995), and has issued an interpretive guidance document regarding its policy. <http://es.epa.gov/oeca/epapolguid.html>. Under EPA’s policy, it will waive all or part of the “gravity-based component” of a penalty and will not seek criminal prosecutions for violations that are discovered either through an audit, or through due diligence, if the violation is promptly disclosed and expeditiously corrected. *Id.* at 66,710-12. EPA will also refrain from routinely requesting voluntary audit reports. *Id.* at 66,706. What problems, if any, might the EPA find with state audit policies that make a voluntary audit report privileged? With a provision that grants companies immunity from violations that are discovered following a voluntary audit?

UNION ELECTRIC COMPANY V. EPA

593 F.2d 299 (8th Cir. 1979)

HEANEY, Circuit Judge.

The Environmental Protection Agency appeals from a judgment of the United States District Court for the Eastern District of Missouri which enjoined the EPA from instituting an enforcement proceeding under the Clean Air Act, 42 U.S.C. § 7401 *et seq.*, against the Union Electric Company or its officers while that Company is actively and in good faith pursuing a revision or variance of the sulfur dioxide (SO₂) regulations of the Missouri Implementation Plan in the administrative agencies and/or courts of the State of Missouri. We reverse the judgment of the District Court and direct that the complaint of Union Electric be dismissed.

Union Electric serves the metropolitan St. Louis area and parts of Illinois and Iowa. Its three coal-fired generating plants, Labadie, Meramec and Sioux, are subject to the SO₂ and opacity restrictions in the Missouri Implementation Plan as approved by the EPA on May 31, 1972.

Union Electric did not seek review of the approved Missouri Implementation Plan within thirty days as it was entitled to do under § 307(b)(1) of the Act. It did, however, obtain one-year variances from the appropriate state and county agencies which eased the emission limitations affecting its three plants. The variances for two of the three plants had expired and Union Electric was applying for extensions when, on May 31, 1974, the Administrator of the EPA notified the Company that the SO₂ emissions from its plants violated the emission limitations contained in the Missouri Implementation Plan, and advised it of the probability that enforcement proceedings would soon be instituted.

* * *

On January 13, 1978, the EPA notified Union Electric of its alleged violations of the SO₂ and opacity standards of the Missouri Implementation Plan. The EPA stated that Union Electric's Labadie and Sioux power plants were in violation of SO₂ and opacity regulations, and that the Meramec plant was in violation of opacity regulations. The notice invited Union Electric to a conference to discuss the violations, and set forth the statutory responsibilities of the Agency if the matter was not resolved within thirty days.

On February 3, 1978, the EPA held the conference with Union Electric. At this conference, the EPA indicated that it would commence enforcement proceedings without waiting for the decision of the Missouri Commission on the Company's request for variances for its plants. The EPA indicated that it was required to proceed with enforcement by § 113(b)(2)(B) of the Clean Air Act Amendments of 1977.

On February 8, 1978, Union Electric brought this action in federal District Court for the Eastern District of Missouri, seeking a declaratory judgment and temporary and permanent injunctive relief. It simultaneously sought action by the State of Missouri on its variance requests.

On March 16, 1978, the District Court granted the preliminary injunction requested by Union Electric. 450 F. Supp. 805. The court found: (1) that Union Electric was in the unenviable position of having daily penalties for noncompliance with the Missouri Implementation Plan accrue while it sought variances pursuant to the statutorily authorized procedure contained in MO. ANN. STAT. § 203.110 (Vernon); (2) that the failure of Union Electric to comply with any governmental directive could constitute an act of default under its first mortgage and deed of trust and make its bonds callable, and that a calling of the bonds could force it into bankruptcy; (3) that compliance with the SO₂ regulations is not possible

because compliance can be achieved only by installing flue gas desulfurization (FGD) equipment at an initial cost of \$713 million and annual operating costs of \$137 million, that the FGD equipment could not be relied upon to operate continually or satisfactorily, that the use of low sulfur coal as an alternative was not possible because the annual cost of such coal would be \$179 million per year and would require a capital investment of \$49 million, resulting in a rate increase of twenty-five percent, assuming that there was no reduction in the use of electricity, and that, in any event, it was impossible to obtain a sufficient supply of low sulfur coal to meet the SO₂ emission regulations; (4) that compliance with SO₂ regulations could be achieved only by a shutdown of the Union Electric plants which would result in a widespread electrical breakdown throughout the Midwest and drastic financial consequences to Union Electric; (5) that the injury to the EPA was not substantial because Union Electric's plants did not violate the National Air Quality Standards for SO₂; and (6) that Union Electric had a substantial likelihood of success on the merits because the Missouri Air Conservation Commission had informally indicated it would approve the variance.

The court concluded that: (1) considerations of procedural due process required that Union Electric be permitted to seek a variance under state procedures for SO₂ emissions prior to suffering a grievous loss which may result from an enforcement proceeding by the EPA; (2) that it had the general equitable power to stay an enforcement proceeding to prevent irreparable harm while Union Electric seeks the variances, in good faith, under state procedures; and (3) that the only fair interpretation of the Clean Air Act is to allow the variance proceeding to proceed to completion prior to the initiation of an enforcement action. This appeal was filed on May 15, 1978.

On July 26, 1978, more than two months after this appeal was filed, the Missouri Air Conservation Commission granted the variance in the SO₂ standards requested by Union Electric for its Sioux and Labadie plants. A petition to review that variance was subsequently filed in the Circuit Court of Cole County, Missouri, by the Coalition for the Environment and by the State of Illinois. That action is still pending.

In *Lloyd A. Fry Roofing Co. v. United States E.P.A.*, 554 F.2d 885 (8th Cir. 1977), we held that pre-enforcement judicial review of an abatement order on grounds of technological or economic infeasibility is inconsistent with the enforcement mechanism established by Congress in the Clean Air Act. Senior Judge M. C. Matthes, writing for the Court, pointed out that a company seeking to have these issues reviewed could do so in state court, or could present its cause as a defense to any enforcement proceedings initiated by the EPA in federal district court. He also noted that if the Agency seeks retroactive civil penalties, a company can protect itself by invoking the equitable doctrine of laches if the Agency failed to promptly seek enforcement. *Id.* at 891 & n.4.

Union Electric would have us distinguish *Fry* on the grounds that the plaintiff in *Fry* sought pre-enforcement review of an EPA compliance order while, here, it seeks only a temporary stay of any enforcement action which may be undertaken by the EPA pursuant to the notice of violation while a state variance from the emission limitations is sought.

Certainly this case cannot be distinguished from *Fry* on the grounds that *Fry* involved a compliance order and this case involves a notice of violation. If an abatement order may not be the subject of an anticipatory lawsuit enjoining its enforcement, then surely a notice of violation, which is a procedural prerequisite to an abatement order, may not be the subject of such a suit.

Nor can it be distinguished from *Fry* on the grounds that *Fry* involved an attempt to obtain a pre-enforcement decision in Federal court on the merits of the Missouri Implementation Plan, while here, the attempt is only to secure a temporary stay of any further enforcement procedures while the Company is actively and in good faith pursuing a revision

of the SO₂ emission regulations in state administrative agencies or courts. This distinction, of course, exists. However, it is not one which permits us to reach a result different than that which was reached in *Fry*. Section 113(b) specifically requires the Administrator to commence a civil action for injunctive relief or for the assessment of civil or criminal penalties thirty days after notice of violation has been given to a major stationary source. One purpose of this section is to require the states to act promptly in granting or denying variance requests. This purpose would be thwarted if federal courts were permitted to remove the pressures that Congress clearly thought necessary to accomplish the objectives of the Clean Air Act. The heart of the decision in *Fry* is that federal courts should not interfere with the pre-enforcement procedures established by the Act to obtain compliance. *Fry* recognized that Congress intended the 1970 Amendments to the Clean Air Act to "expedite the implementation and enforcement of air quality standards" and that the Amendments were "a drastic remedy to what was perceived as a serious and otherwise uncheckable problem." *Id.* at 889, 891.

No case could better illustrate the need for expeditious enforcement than this one. The Missouri Implementation Plan was approved on May 31, 1972. Now, nearly seven years later, Union Electric is still not in compliance with the plan's SO₂ emissions limitations at its Labadie or Sioux plants, and the State of Missouri has yet to finally approve or disapprove its request for a variance from existing standards.

This statement of fact is not necessarily intended to point the finger at Union Electric, the State of Missouri or the EPA. All have been responsible in one way or another for the delays that have occurred. It is only to emphasize that we can only be faithful to the mandate of Congress if we require strict adherence to the procedural routes which it established for bringing clean air to the nation.

In *Fry*, we did not consider a contention by Union Electric which was deemed important by the District Court, *i.e.*, that Union Electric has a due process right to contest the validity of the emission standard without necessarily having to face ruinous penalties if it loses its action. The District Court relied on *Ex Parte Young*, 209 U.S. 123 (1908), in so holding. In *Young*, the State of Minnesota enacted a number of statutes which established maximum rates which could be charged by railroads within the State and which fixed penalties for the railroads' failure to comply. Railroad officials contended that the statutes were invalid because the penalties imposed were so severe that no company official would run the risk of violating the statutes in order to test their validity. The Supreme Court sustained their contention. It stated:

* * *

[W]hen the penalties for disobedience are by fines so enormous and imprisonment so severe as to intimidate the company and its officers from resorting to the courts to test the validity of the legislation, the result is the same as if the law in terms prohibited the company from seeking judicial construction of laws which deeply affect its rights.

Now, to impose upon a party interested the burden of obtaining a judicial decision of such a question (no prior hearing having ever been given) only upon the condition that, if unsuccessful, he must suffer imprisonment and pay fines, as provided in these acts, is, in effect, to close up all approaches to the courts, and thus prevent any hearing upon the question whether the rates as provided by the acts are not too low, and therefore invalid. The distinction is obvious between a case where the validity of the act depends upon the existence of a fact which can be determined only after investigation of a very complicated and technical character, and the ordinary case of statute upon a subject requiring no such

investigation, and over which the jurisdiction of the legislature is complete in any event.

We do not believe *Young* to be applicable here. Union Electric has an opportunity to test the validity of the Missouri Implementation Plan without necessarily incurring confiscatory fines and penalties. See *Brown & Williamson Tobacco Corp. v. Engman*, 527 F.2d 1115 (2d Cir. 1975), *cert. denied*, 426 U.S. 911 (1976). The Administrator of the EPA . . . has two alternatives. He can either seek injunctive relief or can seek to impose civil or criminal penalties. We should not anticipate what the Administrator will seek in advance of his decision. Thus, it cannot be said that confiscatory fines and penalties will *necessarily* be incurred. Indeed, the Administrator apparently feels, in this case, that he has a third alternative—that of staying enforcement until the resolution of Union Electric's variance request.⁸

* * *

We cannot, of course, read more into *Fry* or into the EPA's concession than was intended. We do not now hold that the Clean Air Act will ultimately permit a noncomplying polluter to continue operations without change if such change is not technologically or economically feasible. We do hold, however, that this question can be raised in any future enforcement proceeding, and that Union Electric at that time will be able to argue that Congress did not intend that result or that, if it was intended, the statute is unconstitutional. We reserve our decision on that issue until it is properly presented to us.

We reaffirm our decision in *Lloyd A. Fry Roofing Co. v. United States E.P.A.*, *supra*, and reverse the District Court. Any other course of action would be inconsistent with the enforcement mechanism which Congress has established in the Clean Air Act and would unreasonably delay achieving the objectives of that Act.

NOTES

1. As the court correctly points out in the *Union Electric* case, the notice of violation at issue there is a prerequisite to issuance of any compliance order. Yet both notices of violation (NOVs) and compliance orders (COs) are subject to enforcement through a civil action. Injunctive relief and civil penalties can be obtained for a violation of either an NOV or a CO. The only real distinction is that an NOV cannot be enforced through a civil action unless EPA has assumed enforcement authority in the state or 30 days have elapsed since the notice of violation was issued. § 113(a)(1)(C). In the *Union Electric* case, EPA had not assumed enforcement responsibility over the Missouri SIP. Thus, the 30-day grace period applied.

⁸ On September 13, 1978, the EPA notified Union Electric that it will not initiate any enforcement proceedings against that Company with respect to its alleged violations of the existing SO₂ emission limitations until the Regional Administrator of the EPA has informed Union Electric, in writing, of its decision regarding a recommended approval or disapproval of the variance. The Company was further notified that if EPA's Regional Office recommended approval, the enforcement stay would be extended until such time as the Administrator of EPA has taken final action on the variance request. This notification would also appear to eliminate any risk that the Company's bonds would be called for failure to follow a governmental directive. We express no opinion as to whether this stay is authorized by the Act.

Four days prior to its expiration, Union Electric filed suit. What consequences did Union Electric face if it waited beyond the 30-day period? How compelling is the court's distinction of *Ex Parte Young*, 209 U.S. 123 (1908)? See also *West Penn Power Co. v. Train*, 522 F.2d 302 (3d Cir. 1975). Does the *Union Electric* decision survive the *Harrison v. PPG Industries* decision? See *infra* at Chapter 13. What about *Fry*? Is the action involved here "pre-enforcement review" as characterized by the Court in *Fry*? See CURRIE, AIR POLLUTION: LAW AND ANALYSIS, § 9.04 (1981). Compare *Abbott Laboratories v. Gardner*, 387 U.S. 136 (1967): "Where the legal issue presented is fit for judicial resolution, and where a regulation requires an immediate and significant change in the plaintiffs' conduct of their affairs with serious penalties attached to noncompliance, access to the courts . . . must be permitted, absent a statutory bar or some other unusual circumstance. . . ." *Id.* at 153.

2. Suppose that the government files a civil action against the owner or operator of a major source alleged to be in violation of the Act. The action seeks injunctive relief and civil penalties in accordance with § 113(b) of the Act. Does the owner or operator have a Seventh Amendment right to a jury trial in such a case? In *Tull v. United States*, 481 U.S. 412 (1987), the Court held that a jury trial must be afforded in the context of an analogous Clean Water Act case. The Court determined that the Seventh Amendment had traditionally been applied to civil penalty proceedings. Furthermore, "if a 'legal claim [civil penalties] is joined with an equitable claim [injunction], the right to a jury trial on the legal claim, including all issues common to both claims, remains intact.'" *Id.* at 425 (quoting *Curtis v. Loether*, 415 U.S., at 196, n.11). The Seventh Amendment does not, however, guarantee a right to have a jury assess a civil penalty. The legislative history of the Clean Water Act demonstrated that Congress intended that the trial judge perform this function and, over the dissent of Justices Scalia and Stevens, the Court found this practice consistent with the Seventh Amendment. *Id.*

3. The Labadie and Sioux plants are Phase I "affected sources" under Title IV of the Clean Air Act. Their 1985 SO₂ emissions were estimated to be 4.45 lbs/mmBtu at Labadie, and 4.71 lbs/mmBtu at Sioux. COMPLIANCE STRATEGIES REVIEW, GUIDE TO PHASE I UNITS, 38 (Fieldston, 1992). Under the Phase I requirements, which took effect in 1995, these facilities receive allowances equivalent to 2.5 lbs/mmBtu. § 404. Under Phase II, which takes effect in the year 2000, these facilities will receive allowances equivalent to 1.2 lbs/mmBtu. § 405(b).

SIERRA CLUB V. PUBLIC SERVICE COMPANY OF COLORADO, INC.

894 F. Supp. 1455 (D. Colo. 1995)

BABCOCK, District Judge.

Pursuant to § 304 of the Clean Air Act plaintiff Sierra Club brings a citizen suit for civil penalties and injunctive relief against defendants Public Service Company of Colorado (PSC), Salt River Project Agricultural Improvement and Power District (Salt River), and PacifiCorp (collectively defendants). The defendants are owners/operators of Hayden Station which is a fossil fuel-fired steam generating facility located near Hayden, Colorado. Federal question jurisdiction also exists as this action addresses violations under the Colorado state implementation plan (SIP), the federally delegated air pollution program approved by the U.S.

Environmental Protection Agency (EPA) pursuant to § 110. Sierra Club has complied with the notice of intent to sue provisions of § 304(b)(1)(A).

The Sierra Club moves for partial summary judgment of liability on each of the four claims asserted against the defendants. Claims one and two of the complaint allege that defendants violated the Clean Air Act in excess of 19,000 times in the past five years by emitting pollutants from the Hayden Station in excess of the 20% opacity limitation set forth in the Colorado regulations and in defendants' permit. In support of its motion Sierra Club relies on data and reports from Hayden Station's continuous emissions opacity monitors (CEMs) to establish emission violations. * * *

Defendants move for summary judgment on the first two claims. They contend that data and reports obtained from CEMs cannot be used to establish emissions violations under the SIP. Thus, in this summary judgment context, the pivotal issue is what, if any, evidentiary value may be attached to the CEM data and reports in a citizen suit under § 304 of the CAA.

I.

The following facts are not genuinely disputed. Hayden Station is a fossil fuel-fired steam generating facility located near Hayden, Colorado. Hayden Station is currently owned by PSC, Salt River, and PacifiCorp. Electricity is generated at the facility by burning coal to create steam. The steam passes through a turbine which in turn drives a generator to produce electricity. Hayden Station has two units, Units 1 and 2, which generate electricity in this manner.

* * *

Both units of the Hayden Station are subject to Colorado's air quality control regulations. The regulations provide that no owner or operator of either a new or existing source will permit emissions of any pollutant in excess of 20% opacity. 5 C.C.R. 1001-3, § I(A), II(A). Pursuant to the SIP, visible emissions are measured by CDH personnel using Method 9. 5 C.C.R. § 1001-3, § II.A.1., 40 C.F.R. Part 60, Appendix A, Method 9, p. 667. Method 9 is a visual observation of the plume or stack by a qualified observer. 40 C.F.R. Part 60, Appendix A, Method 9, p. 668. The observer must be certified by the CDH. *Id.* Certification is valid for six months. *Id.* at 669. When observing the plume, the observer stands at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140 degree sector to his back. *Id.* at 668. To the extent possible the observer should be perpendicular to the plume direction. *Id.* at 668. Based on these requirements, it is probable that the observer must ordinarily have access to the premises to conduct the Method 9 observation.

Pursuant to the Colorado regulations, Hayden Station is required to have a "continuous emission monitoring system for the measurement of opacity." 5 C.C.R. 1001-3, § VI.B.1. The system "shall be installed, calibrated, maintained and operated by the owner or operator of any steam generator of a total capacity of or greater than 250 million BTU. . . ." *Id.* The monitoring system "shall have such equipment installed in a location which in accord with sound engineering practice will provide for accurate opacity . . . emission readings." 5 C.C.R. 1001-3, § IV A. The owner or operator is required to calibrate the system at least once a day. *Id.* at § IV.F. Hayden Station has monitored the opacity of emissions from Units 1 and 2 by means of continuous emissions opacity monitors installed in each unit's exhaust stack since August of 1988. The CEMs analyze the opacity of emissions from each unit by passing a beam of light from one side of the stack across the exhaust path to a reflector which returns the light to the opacity sensor. The opacity sensor measures the attenuation of light from the

stack's emissions. The opacity reading reflects the "degree to which emissions reduce the transmission of light and obscure the view of an object in the background." 40 C.F.R. § 60.2.

PSC submits quarterly reports to the CDH which document at six minute intervals the opacity readings from the CEMs. These reports include a computer listing of all CEM data, including a listing of each instance in which the CEM reflects that opacity emissions from either unit exceeded 20% opacity during the quarter and the operator's reasons for the excess emission. According to these reports, Hayden Station has exceeded the 20% opacity limit at least 19,727 times in the past five years.

* * *

CDH has issued two notices of violation (NOV) to Hayden Station in the past five years. The first was issued February 13, 1989, for excess opacity emissions from Unit 2. Based on subsequent testing, CDH chose not to pursue any enforcement action. Hayden Station received a second NOV on September 27, 1993 for excess opacity emissions from Unit 2. Pursuant to a compliance order, PSC was assessed a civil penalty for \$3,000.

Members of the Sierra Club reside in the Yampa Valley where the Hayden Station is situated. Standing is undisputed.

* * *

III.

A.

The Sierra Club's first and second claims allege that defendants have violated and are in violation of Colorado's emission control regulations which make it unlawful for any owner or operator of a stationary source to allow or cause the emission into the atmosphere of any pollutant in excess of 20% opacity. 5 C.C.R. 1001-3, § I.A. To meet its summary judgment burden, Sierra Club relies primarily on defendants' CEM data and reports as evidence of defendants' continuous violation of the 20% opacity limitation. Defendants argue that violations of the opacity standard can only be established through a Method 9 observation as provided for in the Colorado SIP. Because the Sierra Club proffers no evidence of unredressed violations determined by Method 9, defendants contend that summary judgment should enter in their favor on Sierra Club's first two claims.

The issue, then, is whether in this citizen's enforcement action the CEM data and reports constitute evidence of emissions violations. If they do then no reasonable trier of fact could fail to conclude that Sierra Club has proved claims one and two of its complaint. I conclude in light of the applicable statutory and regulatory scheme viewed in common sense fashion that the CEM data and reports constitute competent evidence of ongoing emissions violations.

The Colorado emissions regulations provide that smoke and opacity emissions for stationary sources shall be measured by EPA Method 9. 5 C.C.R. 1001-3, § II.A(1). In support of their contention that Method 9 is the only method that can be used to establish a violation of the opacity standard, defendants cite to an EPA guidance document (the CEM GD) issued April 22, 1986. The CEM GD states that the "legal requirement [for measuring emissions] must specify CEMS as the Compliance Method in order for EPA to rely on CEMS data alone to refer a case to the Department of Justice (DOJ), to prove a violation of an emission limitation in Federal district court, or to issue a Notice of Noncompliance ("NON") under § 120." (Emphasis supplied). Defendants argue that because the legal requirement in the Colorado SIP is Method 9, only Method 9 observations can be used to establish liability for emissions violations. I disagree.

The purpose of the Clean Air Act, as expressed by Congress, is "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the

productive capacity of its population.” § 101. Recognizing the importance of attaining the remedial goal of the Clean Air Act and the magnitude of the task at hand, Congress armed citizens with an independent means to require compliance with the Act. § 304. If a state has an approved SIP, primary enforcement power lies with the implementing state agency. § 114(b). The EPA oversees the state agencies. § 114(b)(2). If the state agency or the EPA fails for any reason to carry out its duties under the Act, citizens may bring suit directly against the alleged violator. § 304. Debate surrounding amendments to the Clean Air Act evidences that citizen suits are an intricate part of the Act’s enforcement scheme. The citizen enforcement provisions of the Act reflect congressional recognition that neither the federal nor state governments have the resources to ensure that generators of air pollutants are consistently in compliance with the Act. Therefore, to supplement governmental enforcement of the Clean Air Act citizen suits provide interstitial means for enforcement of environmental standards in furtherance of the remedial purpose of the Act.

To aid citizen enforcement, access to information necessary to prove that an entity is violating the Act is provided by § 114 of the Act. That section states that any records, reports or information required to be filed under the Act must be made available to the public unless the information involves trade secrets. § 114(c). Under the Colorado SIP, owners or operators of fossil fuel generators are required to install, calibrate, maintain, and operate CEMs. 5 C.C.R. 1001-3, § IV.G. These owners and operators must submit quarterly reports listing excess emissions for all pollutants monitored for that quarter. *Id.* Pursuant to § 114, this information must be made available to the public.

The CEM maintenance and reporting requirements alone impart a high degree of probative reliability to the CEM data and reports. *See Garner v. United States*, 424 U.S. 648 (1976); *United States v. Ward*, 448 U.S. 242 (1980). Moreover, since the Clean Air Act establishes a regime of strict liability, *United States v. Harford Sands, Inc.*, 575 F. Supp. 733, 735 (D. Md. 1983), CEM data and reports may provide conclusive evidence of emissions compliance. *Friends of the Earth v. Potomac Electric Power Co.*, 419 F. Supp. 528, 533 (D. D.C. 1976). It follows that if such records are probative of compliance with the Act they are probative of the Act’s violation.

Indeed, PSC does not genuinely dispute the relative reliability of CEM data over Method 9 data having stated in an earlier compliance proceeding involving another plant that: Given the known limitations upon the accuracy of Method 9, petitioner [PSC] requests that the COMs [CEMs] data be considered conclusive evidence and, accordingly, the alleged violation for Unit No. 2 be dismissed. *See also*, 40 C.F.R. § 60.11(e).

Defendants read the regulations restrictively to mean that violations of the Clean Air Act can be proven only by Method 9. However, in its *amicus* brief CDH states that its exclusive reliance on Method 9 to show emissions violations stems from ambiguity of applicable language, not unreliability of CEM data and reports. CDH supports use of such data and reports to determine opacity violations and does not oppose my saying so. Defendants’ restrictive construction of the regulatory scheme guts the interstitial remedial functions of the Act’s citizen suit provisions contrary to the overriding purpose of the Clean Air Act.

Furthermore, a Method 9 observation must be made by an individual certified by the state. 40 C.F.R. Part 60, Appendix A, Method 9, p. 667, 668. To conduct the observation properly, it is probable that the observer have access to the premises. *Id.* State and federal officials have a right to enter the premises to perform these observations. § 114(a)(2). Citizens do not. Thus, the only way a citizen group can obtain a Method 9 reading is to hire a certified observer who would then either enter the premises illegally or request permission from the alleged violator to enter the premises. As to the former, I cannot find that any act of

Congress would encourage or foster illegal activity. The adage “forewarned is forearmed” applies to the latter.

An entity which has notice when an observation is to occur will be motivated to meet the compliance standard at that time. But continuous compliance, not contrived compliance is the goal here. In this regard the United States General Accounting Office in its Report to the Chairman, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives, stated “it is fair to assume that compliance data being reported by States do not indicate what is happening at a facility on a day-to-day basis, but rather whether the source has been determined to be in compliance at an announced inspection after it has had the opportunity to optimize the performance of its control equipment. Thus, it indicates whether the source is capable of being in compliance rather than whether it is in compliance in its day-to-day operations.” Plaintiff’s Brief, Exh. U, p. 21.

Further support for this reasoning is found in § 114(b)(2). Pursuant to § 114(b)(2) the EPA can conduct inspections and monitor facilities independent of the state agency. The EPA is required to give reasonable notice to the state agency of the inspection and the purpose of the inspection unless the EPA has reason to believe that the state agency will inform the person whose property is to be affected. § 114(d)(1). Thus, Congress recognized that the purposes of the Act could only be fulfilled where the entity investigated was not forewarned of the inspection.

I am concerned that the owner or operator of the stationary source has no duty to permit the representative of the citizen group onto its premises. If I accept defendants’ argument that only Method 9 observations may be used to prove violations of the Clean Air Act, it follows that the alleged violator is afforded a large measure of control over enforcement of the Act by citizens groups. The alleged violator can either deny access to the citizen group or it can permit the Method 9 inspection at a time when it can meet the emission standard. Such a result would be contrary to the Act’s purpose and undermine congressional intent.

Section 304(a)(1)(A) provides that “any person may commence a civil action on his own behalf—against any person . . . who is alleged to have violated (if there is evidence that the violation has been repeated) or to be in violation of (A) an emission standard or limitation.” Emission standard or limitation includes “a schedule or timetable of compliance, emission limitation, standard of performance or emission standard * * * which is in effect under this chapter . . . or under an applicable implementation plan.” § 304(f)(1). Here, the Sierra Club seeks to enforce a National Ambient Air Quality Standard (NAAQS) promulgated pursuant to § 309, and adopted in the Colorado SIP pursuant to § 110. The Sierra Club is, thus, simultaneously enforcing an emission standard “under this chapter” and an emission standard “applicable under an implementation plan.” Defendants argue that a citizen group should be bound by the method of enforcement contained in the SIP. However, nothing in the Act, its implementing regulations, or the Colorado SIP bind citizens to a particular method of proving violations.

Defendants argue at length that use of CEM data and reports as evidence of opacity violations constitutes judicial amendment of the applicable emissions standard. This is not so. The 20% opacity standard is still the 20% opacity standard. Rather, the focus of my analysis under the applicable statutory and regulatory scheme here is evidentiary.

I hold that in this citizen action under the Clean Air Act violations of the 20% opacity standard may be established by CEM records and reports as that data carries with it high indicia of reliability and probative value.

This holding is bolstered by the 1990 amendments to the Clean Air Act which added a new § 113(e). That section provides that in “determining the amount of any penalty to be assessed under . . . section 304(a) of this title . . . the court, as appropriate . . . shall take into consideration . . . the duration of the violation as established by any credible evidence (including evidence other than the applicable test method).” The amendment clarifies that courts may consider any evidence of violation or compliance admissible under the Federal Rules of Evidence, and that they are not limited to consideration of evidence that is based solely on the applicable test method in the State implementation or regulation. For example, courts may consider evidence from continuous emission monitoring systems, expert testimony, and bypassing and control equipment malfunctions, even if these are not the applicable test methods. Thus, the amendment overrules the ruling in *United States v. Kaiser Steel Corp.*, No. 82-2623-IH [1984 WL 186690] (C.D. Cal. January 17, 1984) to the extent that the court in that case excluded the consideration of such evidence.

I conclude that defendants’ CEM data and reports provide undisputed evidence of their continuous violation of the 20% opacity limit at the Hayden Station. Accordingly, I will grant partial summary judgment in favor of Sierra Club on their first two claims for relief and deny defendants’ motion as to these claims. Appropriate remedy will be determined in further proceedings.

* * *

NOTES

1. The decision in *Sierra Club* was made possible at least in part, by the 1990 amendments to the Act. Section 113(a)(1) of the Act provides that—

Whenever, on the basis of *any* information available to the Administrator, the Administrator finds that any person has violated or is in violation of any requirement of an applicable implementation plan or permit may [take appropriate enforcement action].

Emphasis added. Despite this seemingly broad language, in *United States v. Kaiser Steel Corp.*, No. CV82-2623-IH, 1984 WL 186690 (C.D. Cal. 1984), a California district court had ruled that only reference test data could be used to establish violations of the Act. In 1990, Congress amended § 113(e)(1) to provide—

In determining the amount of any penalty to be assessed under this section or section 304 [citizen suits] of this title, the Administrator, or the court, as appropriate, shall take into consideration . . . the *duration of the violation as established by any credible evidence* (including evidence other than the applicable test method). . . .

Emphasis added. In *Sierra Club*, the court relies, at least in part, on this change in the law to justify its decision.

2. In response to the *Sierra Club* decision, the EPA promulgated the “any credible evidence” or “ACE” rule. 62 Fed. Reg. 8314 (1997), *to be codified at*, 40 C.F.R. §§ 51.212; 52.12; 52.33; 60.11; 61.12. The final rule expressly authorizes the use, including the exclusive use, of any credible evidence or information to demonstrate a violation of permit requirements or performance standards issued under the Act. An industry organization challenged the rule

even before it took effect. *Clean Air Implementation Project v. EPA*, No. 97-1117 (D.C. Cir., filed March 7, 1997). Among its claims, the industry group argues that “any credible evidence” can be used only to establish the *duration* of a violation, not the fact of a violation itself. How do you think the court will rule? See Edward B. Sears, *The “Any Credible Evidence Rule”: Is EPA Really Holding All the Cards?*, 4 *Envtl. Law.* 157 (1997).

3. In a portion of the opinion omitted from the text, the court also ruled that PSC had violated 40 C.F.R. § 60.11(d), by failing to operate the Hayden plant “in a manner consistent with good air pollution control practices for controlling emissions.” According to the court, this violation was supported by the continuous violation of the opacity limits, and from the PSC’s own internal documents which acknowledged the need for improved air pollution control technology. 894 F. Supp. at 1462. The court, however, rejected the Sierra Club’s claim that the PSC had not unlawfully modified the Hayden plant. *Id.* at 1461.

UNITED STATES V. BUCKLEY

934 F.2d 84 (6th Cir. 1991)

RYAN, Circuit Judge.

A jury convicted Paul J. Buckley of violating §§ 112(c)(1)(B), 113(c)(1)(C), Clean Air Act provisions regulating the release of asbestos into the environment. The jury also convicted him of violating 42 U.S.C. § 9603(b)(3), a CERCLA provision requiring notification to authorities of any release of a reportable quantity of asbestos. Appealing both convictions, Buckley places two issues before this court. The first, is whether the jury instructions offended due process by misstating the level of scienter required for conviction under the statutes. The second, is whether the district court abused its discretion in denying Buckley’s motion for a mistrial, in view of the government’s efforts to elicit testimony concerning certain unduly prejudicial physical evidence.

We conclude that the jury instructions accurately stated the law, and that the trial court did not abuse its discretion in declining to grant a mistrial.

I.

A grand jury indicted Buckley and other parties on several counts related to the release of asbestos into the environment in the course of a demolition project. This appeal concerns only counts 4 and 5. Count 4 charged that Buckley violated §§ 112(c)(1)(B), 113(c)(1)(C) by knowingly emitting certain amounts of asbestos into the environment in the process of demolishing a stationary source. [The discussion of Count 5, the CERCLA count, is omitted.]

At trial, with respect to count 4 and related counts, the district court charged the jury in part as follows:

“Counts . . . 4, . . . are alleged violations of the Clean Air Act.” The Clean Air Act prohibits the emission of a hazardous air pollutant in violation of any emission standard set by the EPA.

Before any defendant may be found guilty of a violation of the Clean Air Act, you must find beyond a reasonable doubt that . . . he *knowingly* failed or caused any

other person or employee to fail to comply with any of the work practice standards set forth. . . .

(Emphasis added.)

* * *

. . . .

Knowledge ordinarily may not be proved directly, because there is no way of fathoming or scrutinizing the operations of the human mind. But you may infer the defendant's knowledge from the surrounding circumstances.

You may consider any statement made and done or omitted by the defendant, and all other facts and circumstances in evidence which indicate his state of mind.

All the government must prove is that the defendant knew the general nature of the asbestos material on pipes or other facility components being demolished. The government does not have to show that the defendant knew the legal status of the asbestos materials or that he was violating the law.

. . . .

The government is not required to prove a wrongful intent or awareness of wrongdoing. The question whether the defendant acted in good faith is not material. It is the responsibility of persons who voluntarily associate themselves with asbestos demolition operations as supervisors or persons in charge to comply with the law.

(Emphasis added.)

On the element of "knowledge," the district court instructed generally as follows: The law provides that an *individual cannot avoid knowledge by deliberately closing his eyes to what would otherwise be obvious or by failing to investigate if he is in possession of facts which cry out for investigation.*

Consequently, if you find beyond a reasonable doubt that the defendant acted with a conscious purpose to avoided [sic] learning the truth about the presence of asbestos, or *consciously avoided investigating even though he was in possession of facts which demanded investigation*, then you may find that the government has satisfied its burden of establishing knowledge. If you find that the defendant was aware of a high probability that asbestos was present and that the defendant acted with deliberate disregard of the facts, you may find that the defendant acted knowingly. However, if you find that the defendant actually believed that there was no asbestos on pipes or in stoves, he may not be convicted. It is entirely up to you whether you find that the defendant deliberately closed his eyes and any inferences to be drawn from the evidence on this issue.

(Emphasis added.)

Buckley objected to these instructions on the ground that they created a strict-liability criminal offense. The jury found Buckley guilty of counts 4 and 5. The court imposed a \$5000 fine and sentenced Buckley to three years of probation and 300 hours of community service.

II.

A.

Buckley contends that the instructions violated due process by eliminating knowledge as an element of the crimes. He also seems to contend that due process requires the courts to define “knowledge” as awareness of wrongdoing, not awareness of the occurrence of the prohibited acts or omissions.

“The standard on appeal for a court’s charge to the jury is whether the charge, taken as a whole, fairly and adequately submits the issues and applicable law to the jury.” *United States v. Martin*, 740 F.2d 1352, 1361 (6th Cir.1984). The question is “what a reasonable juror could have understood the charge as meaning.” *California v. Brown*, 479 U.S. 538, 541 (1987) (quotation omitted). Even if an instruction proves impermissible viewed in isolation, the reviewing court upholds the instruction if it takes on a permissible meaning in the context of surrounding instructions. *Id.* Where, in formulating instructions, the “district court engages in statutory construction as a matter of law, . . . [the Sixth Circuit] review[s] [the] conclusions de novo.” *United States v. Brown*, 915 F.2d 219, 223 (6th Cir. 1990).

1. Clean Air Act Violation

As effective at the time of the asbestos emissions, the Clean Air Act provided in pertinent part, “No air pollutant [such as asbestos] to which [an established emission] standard applies may be emitted from any stationary source in violation of [the established] standard. . . . Any person who knowingly violates . . . [this prohibition] . . . shall be punished by a fine . . . or . . . imprisonment . . . or . . . both.” §§ 112(c)(1)(B), 113(c)(1)(C) (1986) (emphasis added).

The statutory language makes knowledge an element of the crime of violating emission standards; however, the statute requires knowledge only of the emissions themselves, not knowledge of the statute or of the hazards that emissions pose. “[W]here a statute does not specify a heightened mental element . . . , general intent is presumed to be the required element.” *Brown*, 915 F.2d at 225. Indeed, in the phrase “knowingly violates . . . section 112(c),” “section 112(c)” serves as a shorthand expression for the specific acts that 112(c) forbids in detail. *Cf. United States v. Int’l Minerals and Chemical Corp.*, 402 U.S. 558, 562-63 (1971). Such phrases do “not signal an exception to the rule that ignorance of the law is no excuse.” *Id.*

Because of the very nature of asbestos and other hazardous substances, individuals dealing with them have constitutionally adequate notice that they may incur criminal liability for emissions-related actions. *See id.* at 565. “[W]here . . . dangerous or deleterious . . . products or obnoxious waste materials are involved, the probability of regulation is so great that anyone who is aware that he is in possession of them or dealing with them must be presumed to be aware of the regulation.” *Id.*; *see also United States v. Elshenawy*, 801 F.2d 856, 858-59 (6th Cir. 1986), *cert. denied*, 479 U.S. 1094 (1987). Accordingly, in attempting to establish a due process violation, Buckley misplaces his reliance upon *Lambert v. California*, 355 U.S. 225, 228-29 (1957), in which there were no “circumstances which might move one to inquire as to the necessity of [taking action].” *Id.* at 228-29.

Here the district court properly instructed the jurors that they could not find Buckley guilty unless he “knowingly failed . . . to comply with . . . standards.” The district court also explained the meaning of “knowledge” for the jurors. The court noted that under the law, the government could establish Buckley’s knowledge by showing that Buckley closed his eyes to obvious facts or failed to investigate when aware of facts which demanded investigation. Finally, near the end of its explanation of knowledge, the district court noted that the jury

could not convict Buckley if it found that he actually believed that the pipe and stove coverings contained no asbestos.

Accordingly, we hold that whether evaluated separately or together, these instructions accurately state the law and do not offend due process.

* * *

III.

For the foregoing reasons, Buckley's convictions are AFFIRMED.

NOTES

1. In a similar case decided by the same court, a defendant alleged that the prosecution's decision to charge asbestos-related violations of both the Clean Air Act and CERCLA violated the double jeopardy clause of the fifth amendment of the U.S. Constitution. The court disagreed. While the court acknowledged that the two offenses were predicated on the same conduct, separate counts are allowed so long as the two laws require different elements of proof. *United States v. Louisville Edible Food Products, Inc.*, 926 F.2d 584, 588 (6th Cir. 1991), *cert. denied*, 502 U.S. 859 (1991).

2. In *Adamo Wrecking Co. v. United States*, 434 U.S. 275 (1978), the defendant was charged with violating § 112(c)(1)(B), which at the time of the charge prohibited violations of applicable "emission standards." EPA had promulgated "work practice" standards to limit asbestos emissions during the demolition of buildings, though the standards had been designated as "emission standards" in the rules issued by EPA. The Supreme Court held that the building demolition rules were not "emission standards" and therefore could not form the basis for a criminal prosecution. Following the court's decision in *Adamo Wrecking*, the Act was amended to provide that "any design, equipment, work practice or operational standard, or any combination thereof . . . shall be treated as an emission standard . . ." P.L. 95-623, § 13(b). Still, the courts have sometimes struggled with the implications of the *Adamo Wrecking* decision. See e.g., *United States v. Ethyl Corporation*, 761 F.2d 1153 (5th Cir. 1985), *cert. denied*, 474 U.S. 1070 (1986).

3. As noted previously, the 1990 amendments impose significant new criminal sanctions on persons who knowingly violate the law. § 113(c). They also impose criminal penalties on persons who negligently allow the release of hazardous air pollutants listed under § 112 of the Act, or extremely hazardous air substances listed under § 302(a)(2) of the Superfund Amendments and Reauthorization Act (SARA), where such releases pose an imminent threat of death or serious bodily injury.

AMERICAN CYANAMID COMPANY V. EPA

810 F.2d 493 (5th Cir. 1987)

JERRE S. WILLIAMS, Circuit Judge:

American Cyanamid Co. appeals a decision of the Administrator of the Environmental Protection Agency ("EPA") that it violated Louisiana's EPA-approved air pollution regulations and that the EPA may commence enforcement proceedings to determine American

Cyanamid's liability and calculate a non-compliance penalty for the violation. We affirm the finding that American Cyanamid violated Louisiana's regulations, but we reverse the finding that the EPA may now commence enforcement proceedings, because American Cyanamid would not be in violation of Louisiana's proposed amended regulations. * * *

I. THE CLEAN AIR ACT

The Clean Air Act ("Act"), 42 U.S.C. §§ 7401 *et seq.*, provides a comprehensive scheme for controlling air pollution. In 1970, Congress amended the Act to reapportion responsibility between federal agencies and the states over pollution control. Under the 1970 Amendments, the EPA promulgates "National Ambient Air Quality Standards" ("NAAQS"), and each state may adopt a "State Implementation Plan" ("SIP") to implement and maintain such standards within its borders. See §§ 109(a)(1) (NAAQS); 110(a)(1) (SIPs). A state, through its SIP, may order particular factories and other sources of pollution to reduce emissions to a target level by a certain date. §§ 107; 110(a)(2). The states that adopt SIPs must submit them to the EPA for approval, and the Act provides specifically that the EPA "shall, within four months" approve a proposed SIP that meets certain statutory requirements. § 110(a)(2)[†]

Congress recognized that a state might need to revise its SIP to reflect changed local needs, new technology, or other developments. Accordingly, the Act provides that a state may propose revisions of its SIP to the EPA. As with original proposals, the EPA must approve revisions that satisfy the requirements listed in § 110(a)(2). See § 110(a)(3). Section 110(a)(3) does not specify how long the EPA has to accept or reject a proposed revision. In *Duquesne Light Co. v. EPA*, 698 F.2d 456, 471 (D.C. Cir. 1983), however, the court held that the EPA must act on proposed revisions within four months, the same time given for rulings on original proposals. See also *Council of Commuter Organizations v. Gorsuch*, 683 F.2d 648, 651 n.2 (2d Cir. 1982) and *Council of Commuter Organizations v. Thomas*, 799 F.2d 879, 888 (2d Cir. 1986) (EPA must act on revisions within four months); but see *United States v. National Steel Corp.*, 767 F.2d 1176, 1182 n. 1 (6th Cir. 1985) (four month rule applies only to "general state plans" and not to revisions). We agree with the D.C. Circuit and the Second Circuit and hold that the four month time limit for EPA action on original proposals also applies to proposed revisions. To hold otherwise would intrude upon the logical pattern of the state and federal relationship set up in the statute which recognized in the time limit the important role of the states.

The EPA and the states have joint authority to enforce the approved SIPs. Emissions limitations may be enforced in many ways. The case before us involves § 120, which provides one of the mechanisms for enforcing SIPs. It provides that the EPA or a state may charge a "Noncompliance Penalty" against an entity that violates an SIP.

II. NONCOMPLIANCE PENALTIES UNDER § 120

The Act regulates emissions from "major stationary sources," ones with the capacity to emit more than 100 tons of air pollutants in a year. § 302(j) (defining "major stationary source"); 40 C.F.R. § 66.3(g). Under § 120, the EPA may charge a noncompliance penalty against a major stationary source that violates "applicable legal requirements." See § 120(a)(2)(A)(i); 40 C.F.R. § 66.11. "Applicable legal requirements" means, among other things, the requirements of an "EPA-approved state implementation plan." 40 C.F.R. §

[†] [Editor's note: Under the 1990 amendments, EPA now has six (6) months to determine whether an original SIP submission or a SIP revision is complete. § 110(k)(1)(B). Once a completeness finding is made, EPA has 12 additional months to act on the submission. § 110(k)(2).]

66.3(c)(1). Thus, when a state submits a revision for EPA approval, the existing SIP remains the standard by which compliance is measured until the EPA approves the revision. *Id.*; *Duquesne*, 698 F.2d at 470; *Train*, 421 U.S. at 92. That is, a proposed revision is not an “applicable legal requirement” unless and until the EPA approves it.

The first step in a § 120 action is the sending by the EPA of a “Notice of Noncompliance,” which briefly states why the EPA believes the recipient has violated an approved SIP. The receipt of this Notice begins a so-called “Period of . . . Noncompliance.” § 120(d)(3)(C); 40 C.F.R. § 66.11(c). The EPA may collect a penalty only for violations that occur during the Period of Noncompliance; it may not collect for violations that occur before it issues a Notice of Noncompliance. § 120(d).

Next, the EPA or the recipient of the Notice calculates the amount of the Noncompliance Penalty. Section 120 authorizes the EPA to collect a penalty equal to at least the economic value of noncompliance, that is, the amount the recipient saves by failing to comply with the SIP. § 120(d)(2)(A). The recipient must pay the penalty quarterly during the Period of Noncompliance. § 120(d)(2, 3).

One who receives a Notice of Noncompliance may challenge the Notice by showing that he is exempt from the regulation in question or that he is in compliance with the applicable legal requirements. § 120(b)(4); 40 C.F.R. § 66.13. One who contests the Notice may request a hearing before an Administrative Law Judge (ALJ). § 120(b)(4, 5); 40 C.F.R. § 66.13(a). The recipient may appeal an adverse decision of the ALJ to the Administrator of the EPA.[†] The Administrator’s decision, in turn, is appealable directly to the United States Court of Appeals. § 307(b)(1).

III. STANDARD OF REVIEW OF THE ADMINISTRATOR’S DECISION

We may reverse agency decisions that are “arbitrary, capricious, an abuse of discretion, . . . not in accordance with law[,] in excess of statutory . . . authority, [or] unsupported by substantial evidence.” 5 U.S.C. § 706(2); *see also* § 307(d)(9). “Substantial evidence” means “such relevant evidence as a reasonable mind might accept as adequate to support a conclusion.” *J.H. Rose Truck Line, Inc. v. ICC*, 683 F.2d 943, 948 (5th Cir.1982).

* * *

With this standard of review in mind, we turn to the facts of the case before us.

IV. LOUISIANA’S SIP AND THE AMERICAN CYANAMID PLANT

The EPA has established an NAAQS for ozone. *See* 40 C.F.R. § 50.9. Louisiana has adopted an SIP (the “Louisiana Air Quality Regulations” (“LAQR”)) that, among other things, implements the EPA’s ozone NAAQS. The EPA approved Louisiana’s SIP on October 29, 1981.

To control ozone emissions, Louisiana regulates the storage of Volatile Organic Compounds in “large” tanks, that is, tanks with a capacity of more than 40,000 gallons. LAQR 22.3 directs that such tanks must be equipped with “submerged fill pipe[s]” and “one or more of the vapor loss control devices described [in LAQR 22.3.1.1-22.3.1.4].” These devices include an internal floating roof (22.3.1.1), an external floating roof (22.3.1.2), a vapor gathering and disposal system (22.3.1.3), and “other equivalent equipment or means as may be approved by [Louisiana].” (22.3.1.4).

[†] [Editor’s note: Appeals from an adverse ALJ decision are now authorized to the Environmental Appeals Board. 40 C.F.R. § 66.95(c).]

American Cyanamid owns and operates a chemical plant (the "Fortier Plant") in Westwego, Louisiana, near New Orleans. This plant has the capacity to emit more than 100 tons of pollutants per year, so it is a "major stationary source" of ozone pollution subject to the Act. American Cyanamid stores Volatile Organic Compounds in fourteen "large" tanks at its Fortier Plant. These tanks together emit between 100 and 150 tons of hydrocarbons per year, a small part of the Fortier Plant's total air pollution. The major source of air pollution at the Fortier Plant is a "Waste Gas Disposal Stream," or "AOG Vent." LAQR 22.8 regulates emissions from the vent.

In 1977, the Fortier Plant emitted a total of 16,300 tons of pollution. Of this, the Vent accounted for 13,200 tons. Louisiana's SIP called for American Cyanamid to reduce Vent emissions to 3,960 tons and overall plant emissions to 4,790 tons by the end of 1982. Also by the end of 1982, the company had to equip its fourteen storage tanks to comply with LAQR 22.3.

By the end of 1982, American Cyanamid reduced Vent emissions to 1,520 tons per year and total plant emissions to 2,408 tons, well below the target levels. It did not, however, install floating roofs or other equipment on the storage tanks, and it did not reduce emissions from the tanks to the 1982 target level.

To remedy the situation at the storage tanks, American Cyanamid proposed the application of the so-called "bubble concept" at the Fortier Plant. Under the bubble, or emissions trading, concept, the entire plant would meet and even surpass the 1982 targets by means of the company offsetting "noncompliance" at one source within the plant with "supercompliance" at another source. For instance, the Louisiana SIP called for a 70 percent reduction in pollution from each source at the Fortier Plant to effect a 70 percent reduction at the plant as a whole. Application of the bubble concept would have achieved better than the 70 percent overall plant reduction, but American Cyanamid could have maintained or even increased pollution from its storage tanks if it reduced Vent emissions by more than 70 percent.

On May 6, 1982, Louisiana's Office of Environment Affairs ordered American Cyanamid "to achieve compliance with [LAQR 22.3 by December 31, 1982] by utilizing the bubble concept," thereby authorizing emissions trading at the Fortier Plant. On July 22, 1982, Louisiana submitted to the EPA the May 6 order as a proposed revision of its SIP.

The EPA's Regional Office investigated the proposed use of the bubble concept and forwarded it to EPA Headquarters with a recommendation to deny the revision. Over four years have now passed, and the EPA has not accepted or rejected the proposed revision.

V. THE NOTICE OF NONCOMPLIANCE

On September 28, 1984, the EPA issued a Notice of Noncompliance to American Cyanamid for violating LAQR 22.3 by failing to equip its fourteen storage tanks with appropriate devices. American Cyanamid challenged the Notice, claiming (1) that it did not violate LAQR 22.3, because the bubble concept is an "equivalent . . . means" under LAQR 22.3.1.4 and (2) that the EPA cannot institute § 7420 noncompliance procedures until it rejects the proposed revision. After a hearing, the ALJ upheld the Notice of Noncompliance, ruling that American Cyanamid violated LAQR 22.3 and that the EPA can determine the company's liability and calculate the noncompliance penalty even before it rejects the proposed revision. But the ALJ also ruled that the EPA cannot collect any penalty until it rejects the proposed revision. American Cyanamid appealed to the EPA's Chief Judicial Officer, who affirmed the ALJ. The company then filed a timely appeal in this Court.

VI. COMPLIANCE WITH LAQR 22.3

American Cyanamid equipped its storage tanks with submerged fill pipes, as required by LAQR 22.3. In addition, LAQR 22.3, in its critical wording, requires at least one of the “vapor loss control *devices*” listed in LAQR 22.3.1.1-22.3.1.4 (emphasis added). American Cyanamid concedes that its tanks do not have internal floating roofs, external floating roofs, or vapor gathering and disposal systems. It argues, though, that the bubble concept constitutes “other equivalent . . . means as may be approved by [Louisiana].” LAQR 22.3.1.4. According to American Cyanamid, the bubble itself is a “device” (or “scheme”) that includes the super-effective emissions control equipment at the Vent. Webster’s Dictionary defines “scheme” as a synonym for “device.” Webster’s Third New International Dictionary 618 (1981). It is significant that the State of Louisiana has taken the position throughout this litigation that the bubble concept satisfies the earlier unamended requirements of LAQR 22.3.

The EPA and its ALJ and Chief Judicial Officer, on the other hand, decided that the bubble analysis is not a “device” within the meaning of LAQR 22.3. According to the EPA, Cyanamid’s bubble concept allows extra reductions at the Vent to offset noncompliance at the tanks. Thus, the state and the EPA disagree about what “devices” will satisfy LAQR 22.3.

We acknowledge Louisiana’s important role under the CAA, especially in formulating SIPs. Moreover, we recognize that the bubble concept encourages emissions reduction in the most efficient manner and that specific equipment standards may increase the cost of pollution control. Nevertheless, we review the EPA Administrator’s decision narrowly. The agency’s interpretation—that the unamended LAQR 22.3 requires American Cyanamid to install physical equipment directly on its tanks—is not “clearly wrong or unreasonable” and does not contradict the regulation’s plain meaning. It is, therefore, binding. *Quarles*, 711 F.2d at 707. Thus, we find that American Cyanamid cannot be in compliance with Louisiana’s unamended SIP by use of the bubble concept. Compliance awaits Louisiana’s proposed revised SIP if it is approved.

VII. THE EFFECT OF THE EPA’S DELAY IN RULING ON LOUISIANA’S PROPOSED REVISION

The EPA sent American Cyanamid a Notice of Noncompliance on September 28, 1984. This Notice commenced the Period of Noncompliance for which the EPA may collect a penalty. An important fact, however, complicates the EPA’s case against American Cyanamid. More than four months before September 28, 1984, Louisiana submitted a proposed revision that, if approved by the EPA, would have authorized the emissions trade-off within the Fortier Plant. The EPA issued its Notice of Noncompliance without rejecting Louisiana’s proposal, and the EPA even today, long after the statutory deadline, still has not acted on the revision.

As part of its enforcement proceedings against American Cyanamid, the EPA asks for a penalty from the company for noncompliance since September 28, 1984, although it promises to refund any penalties it collects, plus interest, if it someday approves Louisiana’s revision. The EPA’s ALJ and Administrator held that, in spite of the chance of eventual approval, the EPA may issue its Notice of Noncompliance, determine liability, and calculate the amount of the Noncompliance Penalty but that the EPA may not collect the penalty unless and until it rejects Louisiana’s proposal. We do not accept a Congressional intention to give the EPA such a power when it is in clear and specific violation of the Act because of its failure to act on a proposed revision in the required time. We find that the EPA’s statutory noncompliance affects not only its right to adjudicate tentatively the amount of the Noncompliance Penalty but also, and more important to this case, its authority to commence § 7420 proceedings.

(a) The Noncompliance Penalty

In *Duquesne*, the D.C. Circuit discussed Noncompliance Penalties against companies that violate existing SIPs but comply with pending proposed revisions. 698 F.2d at 470-72. As set out above, the EPA may collect a § 7420 penalty only for noncompliance that occurs after it issues a Notice of Noncompliance. *Duquesne* held that, when a revision has been pending for more than four months, the EPA must hold Noncompliance Penalties “in abeyance” until the EPA rejects the revision. *Id.* at 472. *Duquesne* went on, however, to explain that “[s]hould the EPA ultimately reject the SIP, the penalty should be calculated back to the deadline, with interest.” *Id.* The *Duquesne* rule would allow the EPA to charge American Cyanamid, with interest, for violations since September 28, 1984, if and when the agency rejects Louisiana’s revision. Thus, the *Duquesne* holding provides little or no incentive to the EPA to abide by § 110’s four-month rule; the EPA loses nothing by its contumaciousness.

Moreover, *Duquesne* may encourage the EPA to reject revisions that it should accept. For instance, in the case before us, after the EPA charged American Cyanamid with noncompliance, it delayed action for several years on Louisiana’s revision, which would legalize the company’s alleged noncompliance. After this long delay, the EPA might be reluctant to approve Louisiana’s revision and admit that American Cyanamid is not liable for noncompliance after all. In addition, under *Duquesne*, the EPA will collect penalties against American Cyanamid back to September 28, 1984 if it rejects, but not if it approves, Louisiana’s revision. These incentives may distort the EPA’s even-handed administration of the Act.

A critical element has thus far been given less than adequate emphasis in the earlier stages of this case and in other cases decided under the provisions of the Clean Air Act. Congressional intent is clear that it wished to establish a cooperative relationship between the states and the federal government in setting clean air standards and enforcing those standards. Hence, the provisions for the state SIP and the requirement that the EPA had to act within a period of four months in approving or disapproving a state SIP or, as other cases have held and as we hold, in approving or disapproving the revision of a state SIP.

Where, as here, the state has proposed a revision to its SIP which clearly authorizes local businesses to act in accordance with it without running afoul of the Clean Air Act, the interest of the state itself is deeply involved in the required four month approval or disapproval of the proposed revision. It distorts the statutory scheme to place virtually full emphasis upon the business entity involved as a charged “polluter.” The emphasis of the statute, rather, is upon the important role which the state plays in defining authorized emissions. Louisiana in this case did not propose a clearly unacceptable or unrealistic revision. The bubble is a reasonable concept under the Clean Air Act. Indeed, it has been approved by the EPA in certain situations, although the EPA persists in refusing to act upon Louisiana’s proposed recognition of the bubble concept. The issue then is not so much pollution by American Cyanamid but the default of the EPA in carrying out the congressional intent to work in close cooperation with the states in implementing standards and enforcing the Clean Air Act. We emphasize the importance of the EPA acting, not for the benefit of American Cyanamid, but for the benefit of the State of Louisiana which is by statute designated to play a significant cooperating role with the EPA.

Thus, we now hold that the EPA may not collect a penalty for the period between (1) four months after a state submits a proposed revision and (2) the date the EPA rejects that revision. This standard, of course, works in conjunction with the standard that the Period of Noncompliance begins only with the Notice of Noncompliance. In the case before us, the EPA issued its Notice more than four months after Louisiana submitted its revision. Thus, the

EPA may collect a penalty from American Cyanamid only for violations that occur if the EPA rejects Louisiana's revision and after such a rejection. The EPA admits that if it approves the revision, no penalty may be collected.

Our holding today does not bar the EPA from collecting Noncompliance Penalties in other situations. For instance, the interests of the state would have been properly protected if the EPA had issued its Notice of Noncompliance to American Cyanamid before Louisiana submitted its proposed revision. Then the EPA could have charged, calculated, and collected a Noncompliance Penalty from the date of the Notice until four months after Louisiana submitted its revision, when the penalty would cease. The EPA could then resume Noncompliance Penalties if and when it rejected the state's proposed revision.

Congress intended § 120 not only to achieve effective compliance with the CAA but also "to prevent noncomplying sources from gaining an unfair advantage over complying sources with which they compete." H.R. Rep. No. 294, 95th Cong., 1st. Sess., *reprinted in*, 1977 U.S.Code Cong. & Ad.News 1077, 1083. If the EPA ultimately rejects the Louisiana revision, American Cyanamid might be said to have gained an advantage over competitors that complied with the unrevised SIP. *Duquesne* urged that sources of pollution, such as American Cyanamid in this case, might "benefit undeservedly" if they could escape § 120 penalties while the EPA delayed action on revisions. 698 F.2d at 472. *Duquesne*, however, inadequately recognized the role of the states under the Act, as we pointed out above. Congress, in explaining the Act, found "that the prevention and control of air pollution . . . is the primary responsibility of States and local governments. . . ." § 101(a)(3). Thus, in the case before us, it was the State of Louisiana, not American Cyanamid, that proposed the bubble as a revision. If the EPA eventually rejects the revision, American Cyanamid will not benefit "undeservedly"; the state undertook to authorize Cyanamid and others to implement the bubble. If the EPA collects less than it could collect retroactively under the *Duquesne* ruling, it is because of its own failure to act within the time limits set by the Act.

The EPA's interpretation of § 120 exposes American Cyanamid and similarly situated individuals and companies to the unacceptable risk that, contrary to state policy decisions authorized under the Act, they will be fined because of delays within the EPA. The agency's promise of reimbursement in the event of approval provides insufficient consolation or protection, especially to recipients that cannot afford to pay the Noncompliance Penalty. Yet, this protection certainly should not be limited in availability only to alleged polluters in financial difficulty; it must be available to all in the same situation.

(b) § 7420 Proceedings

We also hold that when the EPA issues its Notice of Noncompliance more than four months after a state proposes a SIP revision, the EPA may not commence § 120 proceedings until it rejects the proposed revision. *Duquesne* takes a different approach. It allows the EPA to issue its Notice of Noncompliance, determine liability, and calculate the amount of the Noncompliance Penalty pending approval or rejection of the proposed revision. 698 F.2d at 470-72. In the case before us, the ALJ and the Administrator allowed the EPA to pursue such proceedings. American Cyanamid challenged the Notice of Noncompliance before the ALJ, the Administrator, and now this Court—at great expense to all parties. If the EPA approves Louisiana's revision, these efforts will have wasted the resources of the company and the government. Our holding eliminates the risk of such wasted effort in the future.

* * *

IX. CONCLUSION

* * *

We hold that the EPA may not continue to prosecute its § 7420 action against American Cyanamid until and unless it rejects Louisiana's proposed revision. If the EPA bursts American Cyanamid's bubble, it can then undertake to enforce Noncompliance Penalties against the company. * * *

 NOTES

1. How does the Fifth Circuit's decision in *American Cyanamid* differ from the decision of the D.C. Circuit in *Duquesne Light*? Which decision offers the better rule? Professor William Rodgers is critical of the *American Cyanamid* rule:

The decision in *American Cyanamid* extends to the polluter the profit from delay (that is the bane of Section 120) although the court insists that this unfortunate price should be viewed as some kind of amercement against EPA for transgressing the sovereign expectations of the State of Louisiana by neglecting to give prompt attention to SIP revisions requests. The court in *American Cyanamid* offers a subtle analysis of incentives and strategies in the administrative process. It will not be surprised, perhaps, that the opinion may encourage SIP-submitters to develop the art of the "unapprovable package" replete with data shortages and loose ends; it is unusual that EPA's oft-denounced inability to reach a conclusion can become a source of satisfaction and advantage, not anguish and regret.

WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW, AIR AND WATER, § 3.39 (Fall, 1997 Pocket Part). Note that the Clean Air Act now gives EPA six (6) months to determine whether a SIP revision is complete (§ 110(k)(1)(B)), and then an additional twelve (12) months to act on the submission. § 110(k)(2). Note also that if EPA fails to make a completeness determination within six months, the submission is deemed complete. How do these changes affect Professor Rodgers' analysis? In answering this question consider that Louisiana's SIP revision was pending before EPA for more than 4 years at the time of the *American Cyanamid* decision.

2. How does EPA determine the economic value of delay in compliance? EPA developed a complex mathematical penalty calculation model to perform this task. 40 CFR part 67, appendices A-C (1997). In *Duquesne Light v. EPA*, 698 F.2d 456, 483-85 (D.C. Cir. 1983), the court rejected several claims made by the petitioners regarding the data assumptions used for this model.

3. For a comprehensive analysis of § 120 of the Act see Neil Orloff, *Buttressing the Traditional Approach to Enforcement of Environmental Requirements: Noncompliance Penalties Under the Clean Air Act*, 9 ENVTL. L. REP. 50029 (ELI, 1979).

PROBLEM #8: INSPECTION AND ENFORCEMENT OF STATIONARY SOURCES

Since 1963, Refined Oil Products of America (ROPA), has operated a small oil refinery near Valley View, Amarillo. In 1996, ROPA received a permit from the State of Amarillo which allows it to emit 1100 tons of SO_2 /year, 500 tons of CO/year, and 800 tons of particulate matter/year. The permit was issued by the State in accordance with procedures adopted pursuant to Title V of the Clean Air Act. It is now 2001. For the past two years, ROPA has managed to stay within its permit requirements for CO and particulates, but has exceeded the SO_2 limits established in its permit by about 10%/year. ROPA has determined that the costs associated with bringing its SO_2 levels below the permitted level are prohibitive, and that it will either have to shut down its facility, obtain a revision of its permit, or continue to operate in violation of its permit as it has done for the past two years.

You have been asked to advise ROPA about the risks associated with the latter course of action—continuing to operate in violation of its permit. Review §§ 113, 114, and 120 before attempting to respond. What advantage, if any, might ROPA realize by seeking a revision of its permit? *See e.g.*, § 504(f). Will it matter whether Valley View is a nonattainment area for SO_2 ? If so, how? Should ROPA consider “opting in” to the Acid Deposition Program? *See* § 410. How might this help ROPA?

11 STRATOSPHERIC OZONE DEPLETION

Stratospheric ozone depletion is a serious environmental problem that appears well on its way to a favorable resolution because of a serendipitous combination of international cooperation, and the availability of practical substitutes for ozone depleting chemicals. The following chapter begins with a review of the science of ozone depletion. It then reviews the efforts made by the international community generally, and the United States in particular, to address the problem.

OZONE SCIENCE

http://www.epa.gov/ozone/science/sc_fact.html

The Earth's ozone layer protects all life from the sun's harmful radiation, but human activities have damaged this shield. Less protection from ultraviolet light will, over time, lead to higher skin cancer and cataract rates and crop damage. The U.S., in cooperation with over 140 other countries, is phasing out the production of ozone-depleting substances in an effort to safeguard the ozone layer.

I. THE OZONE LAYER

The Earth's atmosphere is divided into several layers. The lowest region, the troposphere, extends from the Earth's surface up to about 10 kilometers (km) in altitude. Virtually all human activities occur in the troposphere. Mt. Everest, the tallest mountain on the planet, is only about 9 km high. The next layer, the stratosphere, continues from 10 km to about 50 km. Most commercial airline traffic occurs in the lower part of the stratosphere.

Most atmospheric ozone is concentrated in a layer in the stratosphere, about 15-30 kilometers above the Earth's surface. Ozone is a molecule containing three oxygen atoms. It is blue in color and has a strong odor. Normal oxygen, which we breathe, has two oxygen atoms and is colorless and odorless. Ozone is much less common than normal oxygen. Out of each 10 million air molecules, about 2 million are normal oxygen, but only 3 are ozone.

However, even the small amount of ozone plays a key role in the atmosphere. The ozone layer absorbs a portion of the radiation from the sun, preventing it from reaching the planet's surface. Specifically, it absorbs the portion of ultraviolet light called UVB. UVB has been linked to various types of skin cancer, cataracts, and harm to some crops, certain materials, and some forms of marine life.

At any given time, ozone molecules are constantly formed and destroyed in the stratosphere. The total amount, however, remains relatively stable. The concentration of the ozone layer can be thought of as a stream's depth at a particular location. Although water is constantly flowing in and out, the depth remains constant.

While ozone concentrations vary naturally with sunspots, the seasons, and latitude, these processes are well understood and predictable. Scientists have established records spanning several decades that detail normal ozone levels during these natural cycles. Each natural reduction in ozone levels has been followed by a recovery. Recently, however, convincing scientific evidence has shown that the ozone shield is being depleted well beyond changes due to natural processes.

II. OZONE DEPLETION

For over 50 years, chlorofluorocarbons (CFCs) were thought of as miracle substances. They are stable, nonflammable, low in toxicity, and inexpensive to produce. Over time, CFCs found uses as refrigerants, solvents, foam blowing agents, and in other smaller applications. Other chlorine-containing compounds include methyl chloroform, a solvent, and carbon tetrachloride, an industrial chemical. Halons, extremely effective fire extinguishing agents, and methyl bromide, an effective produce and soil fumigant, contain bromine. All of these compounds have atmospheric lifetimes long enough to allow them to be transported by winds into the stratosphere. Because they release chlorine or bromine when they break down, they damage the protective ozone layer. The discussion of the ozone depletion process below focuses on CFCs, but the basic concepts apply to all of the ozone-depleting substances (ODS).

In the early 1970s, researchers began to investigate the effects of various chemicals on the ozone layer, particularly CFCs, which contain chlorine. They also examined the potential impacts of other chlorine sources. Chlorine from swimming pools, industrial plants, sea salt, and volcanoes does not reach the stratosphere. Chlorine compounds from these sources readily combine with water and repeated measurements show that they rain out of the troposphere very quickly. In contrast, CFCs are very stable and do not dissolve in rain. Thus, there are no natural processes that remove the CFCs from the lower atmosphere. Over time, winds drive the CFCs into the stratosphere.

The CFCs are so stable that only one process breaks them down: exposure to strong UV radiation. When a CFC molecule breaks down, it releases atomic chlorine. One chlorine atom can destroy over 100,000 ozone molecules. The net effect is to destroy ozone faster than it is naturally created. To return to the analogy comparing ozone levels to a stream's depth, CFCs act as a siphon, removing water faster than normal and reducing the depth of the stream.

Large fires and certain types of marine life produce one stable form of chlorine that does reach the stratosphere. However, numerous experiments have shown that CFCs and other widely-used chemicals produce roughly 85% of the chlorine in the stratosphere, while natural sources contribute only 15%.

Large volcanic eruptions can have an indirect effect on ozone levels. Although Mt. Pinatubo's 1991 eruption had no effect on stratospheric chlorine concentrations, it did produce large amounts of particles called aerosols. These aerosols increase chlorine's effectiveness at destroying ozone. The aerosols only increased depletion because of the presence of CFC-based chlorine. In effect, the aerosols increased the efficiency of the CFC siphon, lowering ozone levels even more than would have otherwise occurred. Unlike long-term ozone depletion, however, this effect is short-lived. The aerosols from Mt. Pinatubo have already disappeared, but satellite, ground-based, and balloon data still show ozone depletion occurring closer to the historic trend.

One example of ozone depletion is the annual ozone "hole" over Antarctica that has occurred during the Antarctic Spring since the early 1980s. Rather than being a literal hole through the layer, the ozone hole is a large area of the stratosphere with extremely low amounts of ozone. Ozone levels fall by over 60% during the worst years.

In addition, recent research has shown that ozone depletion occurs over the latitudes that include North America, Europe, Asia, and much of Africa, Australia, and South America. Over the U.S., ozone levels have fallen 5-10%, depending on the season. Thus, ozone depletion is a global issue and not just a problem at the South Pole.

Reductions in ozone levels will lead to higher levels of UVB reaching the Earth's surface. The sun's output of UVB does not change; rather, less ozone means less protection, and hence more UVB reaches the Earth. Studies have shown that in the Antarctic, the amount of UVB measured at the surface can double during the annual ozone hole. Another study recently confirmed the relationship between reduced ozone and increased UVB levels in Canada during the past several years.

Laboratory and epidemiological studies demonstrate that UVB causes nonmelanoma skin cancer and plays a major role in malignant melanoma development. In addition, UVB has been linked to cataracts. All sunlight contains some UVB, even with normal ozone levels. It is always important to limit exposure to the sun. However, ozone depletion will increase the amount of UVB, which will then increase the risk of health effects. Furthermore, UVB harms some crops, plastics and other materials, and certain types of marine life.

III. THE WORLD'S REACTION

The initial concern about the ozone layer in the 1970's led to a ban on the use of CFCs as aerosol propellants in the U.S. However, production of CFCs and other ozone-depleting substances grew rapidly afterward as new uses were discovered.

Through the 1980s, other uses expanded and the world's nations became increasingly concerned that these chemicals would further harm the ozone layer. In 1985, the Vienna Convention was adopted to formalize international cooperation on this issue. Additional efforts resulted in the signing of the Montreal Protocol in 1987. The original protocol would have reduced the production of CFCs by half by 1998.

After the original Protocol was signed, new measurements showed worse damage to the ozone layer than was originally expected. In 1992, reacting to the latest scientific assessment of ozone layer, the Parties decided to completely end production of halons by the beginning of 1994 and of CFCs by the beginning of 1996 in developed countries.

Because of measures taken under the Protocol, emissions of ozone-depleting substances are already falling. Assuming continued compliance, stratospheric chlorine levels will peak in a few years and then slowly return to normal. The good news is that the natural ozone production process will heal the ozone layer in about 50 years.

IV. THE EPA STRATOSPHERIC PROTECTION PROGRAM

In addition to regulating the end of production of the ozone-depleting substances, the U.S. Environmental Protection Agency (EPA) implements several other programs to protect the ozone layer under Title VI of the Clean Air Act. These programs include refrigerant recycling, product labeling, banning nonessential uses of certain compounds, and reviewing substitutes.

* * *

NOTE

In addition to its World Wide Web site, the EPA maintains a *Stratospheric Ozone Protection Hotline* (800-296-1996) that responds to inquiries and distributes information about ozone depletion and EPA programs to protect the ozone layer.

**MONTREAL PROTOCOL ON SUBSTANCES THAT
DEplete THE OZONE LAYER, 1987**
(with adjustments and amendments 1990, 1992)

The Parties to this Protocol,

Being Parties to the Vienna Convention for the Protection of the Ozone Layer.

Mindful of their obligation under that Convention to take appropriate measures to protect human health and the environment against adverse effects resulting or likely to result from human activities which modify or are likely to modify the ozone layer,

Recognizing that world-wide emissions of certain substances can significantly deplete and otherwise modify the ozone layer in a manner that is likely to result in adverse effects on human health and the environment,

Conscious of the potential climatic effects of emissions of these substances,

Aware that measure taken to protect the ozone layer from depletion should be based on relevant scientific knowledge, taking into account technical and economic considerations,

Determined to protect the ozone layer by taking precautionary measures to control equitably total global emissions of substances that deplete it, with the ultimate objective of their elimination on the basis of developments in scientific knowledge, taking into account technical and economic considerations and bearing in mind the developmental needs of developing countries,

Acknowledging that special provision is required to meet the needs of developing countries, including the provision of additional financial resources and access to relevant technologies, bearing in mind that the magnitude of funds necessary is predictable, and the funds can be expected to make a substantial difference in the world's ability to address the scientifically established problem of ozone depletion and its harmful effects,

Noting the precautionary measures for controlling emissions of certain chlorofluorocarbons that have already been taken at national and regional levels,

Considering the importance of promoting international co-operation in the research, development and transfer of alternative technologies relating to the control and reduction of emissions of substances that deplete the ozone layer, bearing in mind in particular the needs of developing countries,

Have agreed as follows:

ARTICLE 1: DEFINITIONS

For the purposes of this Protocol:

* * *

4. "Controlled substance" means a substance listed in Annex A or in Annex B to this Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.

5. "Production" means the amount of controlled substances produced minus the amount destroyed by technologies to be approved by the Parties and minus the amount entirely used as feedstock in the manufacture of other chemicals. The amount recycled and reused is not to be considered as "production."

6. "Consumption" means production plus imports minus exports of controlled substances.

7. "Calculated levels" of production, imports, exports and consumption means levels determined in accordance with Article 3.

8. "Industrial rationalization" means the transfer of all or a portion of the calculated level of production of one Party to another, for the purpose of achieving economic efficiencies or responding to anticipated shortfalls in supply as a result of plant closures.

9. "Transitional substance" means a substance in Annex C to this Protocol whether existing alone or in a mixture. It includes the isomers of any such substance, except as may be specified in Annex C, but excludes any transitional substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.

ARTICLE 2: CONTROL MEASURES

* * *

5. Any Party may, for any one or more control periods, transfer to another Party any portion of its calculated level of production set out in Articles 2A to 2E, provided that the total combined calculated levels of production of the Parties concerned for any group of controlled substances do not exceed the production limits set out in those Articles for that group. Such transfer of production shall be notified to the Secretariat by each of the Parties concerned, stating the terms of such transfer and the period for which it is to apply.

6. Any Party not operating under Article 5, that has facilities for the production of Annex A or Annex B controlled substances under construction, or contracted for, prior to 16 September 1987, and provided for in national legislation prior to 1 January 1987, may add the production from such facilities to its 1986 production of such substances for the purposes of determining its calculated level of production for 1986, provided that such facilities are completed by 31 December 1990 and that such production does not raise that Party's annual calculated level of consumption of the controlled substances above 0.5 kilogram per capita.

* * *

8. (a) Any Parties which are Member States of a regional economic integration organization as defined in Article I(6) of the Convention may agree that they shall jointly fulfill their obligations respecting consumption under this Article and Articles 2A to 2E provided that their total combined calculated level of consumption does not exceed the levels required by this Article and Articles 2A to 2E.

(b) The Parties to any such agreement shall inform the Secretariat of the terms of the agreement before the date of the reduction in consumption with which the agreement is concerned.

(c) Such agreement will become operative only if all Member States of the regional economic integration organization and the organization concerned are Parties to the Protocol and have notified the Secretariat of their manner of implementation.

9. (a) Based on the assessments made pursuant to Article 6, the Parties may decide whether:

(i) adjustments to the ozone depleting potentials specified in Annex A should be made and, if so, what the adjustments should be; and

(ii) further adjustments and reductions of production or consumption of the controlled substances should be undertaken and, if so, what the scope, amount and timing of any such adjustments and reductions should be.

(b) Proposals for such adjustments shall be communicated to the Parties by the Secretariat at least six months before the meeting of the Parties at which they are proposed for adoption.

(c) In making such decisions, the Parties shall make every effort to reach agreement by consensus. If all efforts at consensus have been exhausted, and no agreement reached, such decisions shall, as a last resort, be adopted by a two-thirds majority vote of the Parties present and voting representing a majority of the Parties operating under paragraph 1 of Article 5 present and voting and a majority of the Parties not so operating present and voting.

(d) The decisions, which shall be binding on all Parties, shall forthwith be communicated to the Parties by the Depositary. Unless otherwise provided in the decisions, they shall enter into force on the expiry of six months from the date of the circulation of the communication by the Depositary.

10. Based on the assessments made pursuant to Article 6 of this Protocol and in accordance with the procedure set out in Article 9 of the Convention, the Parties may decide:

(i) whether any substances, and if so which, should be added to or removed from any annex to this Protocol, and

(ii) the mechanism, scope and timing of the control measures that should apply to those substances;

11. Notwithstanding the provisions contained in this Article and Articles 2A to 2E, Parties may take more stringent measures than those required by this Article and Articles 2A to 2E.

ARTICLE 2A: CFCs

1. Each Party shall ensure that for the twelve-month period commencing on the first day of the seventh month following the date of the entry into force of this Protocol, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed its calculated level of consumption in 1986. By the end of the same period, each Party producing one or more of these substances shall ensure that its calculated level of production in 1986, except that such level may have increased by no more than ten per cent based on the 1986 level. Such increase shall be permitted only so as to satisfy the basic domestic needs of the Parties operating under Article 5 and for the purposes of industrial rationalization between Parties.

* * *

3. Each Party shall ensure that for the twelve-month period commencing on 1 January 1994, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed, annually, twenty-five per cent of its calculated level of consumption in 1986. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, twenty-five per cent of its calculated level of production in 1986. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1986.

4. Each Party shall ensure that for the twelve-month period commencing on 1 January 1996, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex A does not exceed, zero. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1986. This paragraph will apply save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential.

ARTICLE 2B: HALONS

1. Each Party shall ensure that for the twelve-month period commencing on 1 January 1992, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group II of Annex A does not exceed, annually, its calculated level of consumption in 1986. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, its calculated level of production in 1986. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1986.

2. Each Party shall ensure that for the twelve-month period commencing on 1 January 1994, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group II of Annex A does not exceed zero. Each Party producing one or more of these of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1986. This paragraph will apply save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential.

ARTICLE 2C. OTHER FULLY HALOGENATED CFCs

1. Each Party shall ensure that for the twelve-month period commencing on 1 January 1993, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed, annually, eighty per cent of its calculated level of consumption in 1989. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, eighty per cent of its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

2. Each party shall ensure that for the twelve-month period commencing on 1 January 1997, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed, annually, twenty-five per cent of its calculated level of consumption in 1989. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed, annually, twenty-five per cent of its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

3. Each Party shall ensure that for the twelve-month period commencing on 1 January 1996, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substances in Group I of Annex B does not exceed zero. Each Party producing one or more of these substances shall, for the same periods, ensure that its calculated level of production of the substances does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989. This paragraph will apply save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential.

ARTICLE 2D. CARBON TETRACHLORIDE

1. Each Party shall ensure that for the twelve-month period commencing on 1 January 1995, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substance in Group II of Annex B does not exceed, annually fifteen per cent of its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, fifteen per cent of its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

2. Each party shall ensure that for the twelve-month period commencing on 1 January 1996, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substance in Group II of Annex B does not exceed zero. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production does not exceed zero. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989. This paragraph will apply save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential.

ARTICLE 2E. 1,1,1—TRICHLOROMETHANE (METHYL CHLOROFORM)

1. Each Party shall ensure that for the twelve-month period commencing on 1 January 1993, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substance in group III of Annex B does not exceed, annually, its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, its calculated level of production in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

2. Each Party shall ensure that for the twelve-month period commencing on 1 January 1994, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed, annually, fifty per cent of its calculated level of consumption in 1989. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed, annually, fifty per cent of its calculated level of consumption in 1989. However, in order to satisfy the basic domestic needs of the Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to ten per cent of its calculated level of production in 1989.

3. Each Party shall ensure that for the twelve-month period commencing on 1 January 1996, and in each twelve-month period thereafter, its calculated level of consumption of the controlled substance in Group III of Annex B does not exceed zero. Each Party producing the substance shall, for the same periods, ensure that its calculated level of production of the substance does not exceed zero. However, in order to satisfy the basic domestic needs of Parties operating under paragraph 1 of Article 5, its calculated level of production may exceed that limit by up to fifteen per cent of its calculated level of production in 1989. This paragraph will apply save to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be essential.

ARTICLE 3: CALCULATION OF CONTROL LEVELS

* * *

ARTICLE 4: CONTROL OF TRADE WITH NON-PARTIES

1. As of January 1990, each party shall ban the import of the controlled substances in Annex A from any state not party to this Protocol.
2. As of 1 January 1993, each party shall ban the export of any controlled substances in Annex A to any State not party to this Protocol.
3. By 1 January 1992, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of products containing controlled substances in Annex A. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any State not party to this Protocol.
4. By 1 January 1994, the Parties shall determine the feasibility of banning or restricting, from States not party to this Protocol, the import of products produced with, but not containing, controlled substances in Annex A. If determined feasible, the Parties shall, following the procedures in Article 10 of the Convention, elaborate in an annex a list of such products. Parties that have not objected to the annex in accordance with those procedures shall ban, within one year of the annex having become effective, the import of those products from any state not party to this Protocol.
5. Each Party undertakes to the fullest practicable extent to discourage the export to any State not party to this Protocol of technology for producing and for utilizing controlled substances.
6. Each Party shall refrain from providing new subsidies, and, credits, guarantees or insurance programs for the export to States not party to this Protocol of products, equipment, plants or technology that would facilitate the production of controlled substances.
7. Paragraphs 5 and 6 shall not apply to products, equipment, plants or technology that improve the containment, recovery, recycling or destruction of controlled substances, promote the development of alternative substances, or otherwise contribute to the reduction of emissions of controlled substances.
8. Notwithstanding the provisions of this Article, imports referred to in paragraphs 1, 1 *bis*, 3, 3 *bis*, 4 and 4 *bis*, and exports referred to in paragraphs 2 and 2 *bis*, may be permitted from, or to, any State not party to this Protocol, if that State is determined by a meeting of the Parties to be in full compliance with Article 2, Articles 2A to 2E, and this Article and have submitted data to that effect as specified in Article 7.
9. For the purposes of this Article, the term "State not party to this Protocol" shall include, with respect to a particular controlled substance, a State or regional economic integration organization that has not agreed to be bound by the control measures in effect for that substance.

ARTICLE 5: SPECIAL SITUATION OF DEVELOPING COUNTRIES

1. Any Party that is a developing country and whose annual calculated level of consumption of the controlled substances in Annex A is less than 0.3 kilograms per capita on the date of the entry into force of the Protocol for it, or any time thereafter until 1 January 1999, shall, in order to meet its basic domestic needs, be entitled to delay for ten years its compliance with the control measures set out in Articles 2A to 2E.
2. However, any Party operating under paragraph 1 of this Article shall exceed neither an annual calculated level of consumption of the controlled substances in Annex A of 0.3

kilograms per capita nor an annual calculated level of consumption of the controlled substances of Annex B of 0.2 kilograms per capita.

3. When implementing the control measures set out in Articles 2A to 2E, any party operating under paragraph 1 of this Article shall be entitled to use:

(a) For controlled substances under Annex A, either the average of its annual calculated level of consumption for the period 1995 to 1997 inclusive or a calculated level of consumption of 0.3 kilograms per capita, whichever is the lower, as the basis for determining its compliance with the control measures;

(b) For the controlled substances under Annex B, the average of its annual calculated level of consumption of 0.2 kilograms per capita, whichever is the lower, as the basis for determining its compliance with the control measures.

4. If a Party operating under paragraph 1 of this Article, at any time before the control measures obligations in Articles 2A to 2E become applicable to it, finds itself unable to obtain an adequate supply of controlled substances, it may notify this to the Secretariat. The Secretariat shall forthwith transmit a copy of such notification to the Parties, which shall consider the matter at their next Meeting, and decide upon appropriate action to be taken.

5. Developing the capacity to fulfil the obligations of the Parties operating under paragraph 1 of this Article to comply with the control measures set out in Articles 2A to 2E and their implementation by those same Parties operating will depend upon the effective implementation of the financial co-operation as provided by Article 10 and transfer of technology as provided by Article 10A.

6. Any Party operating under paragraph 1 of this Article may, at any time, notify the Secretariat in writing that, having taken all practicable steps, it is unable to implement any or all of the obligations laid down in Articles 2A to 2E due to the inadequate implementation of Articles 10 and 10A. The Secretariat shall forthwith transmit a copy of the notification to the Parties, which shall consider the matter at their next Meeting, giving due recognition to paragraph 5 of this Article, and shall decide upon appropriate action to be taken.

7. During the period between notification and the Meeting of the Parties at which the appropriate action referred to in paragraph 6 above is to be decided, or for a further period if the Meeting of the Parties so decides, the noncompliance procedures referred to in Article 8 shall not be invoked against the notifying Party.

8. A Meeting of the Parties shall review, not later than 1995, the situation of the Parties operating under paragraph 1 of this Article, including the effective implementation of financial co-operation and transfer of technology to them, and adopt such revisions as may be deemed necessary regarding the schedule of control measures applicable to those Parties.

9. Decisions of the Parties referred to in paragraphs 4, 6, and 7 of this Article shall be taken according to the same procedure applied to decision-making under Article 10.

ARTICLE 6: ASSESSMENT AND REVIEW OF CONTROL MEASURES

Beginning in 1990, and at least every four years thereafter the Parties shall assess the control measures provided for in Article 2, Articles 2A to 2E, and the situation regarding production, imports and exports of the transitional substances in Group I of Annex C on the basis of available scientific, environmental, technical and economic information. At least one year before each assessment, the Parties shall convene appropriate panels of experts qualified in the fields mentioned and determine the composition and terms of reference of any such panels. Within one year of being convened, the panels will report their conclusions, through the Secretariat to the Parties.

ARTICLE 7: REPORTING OF DATA

1. Each Party shall provide to the Secretariat, within three months of becoming a Party, statistical data on its production, imports and exports of each of the controlled substances in Annex A for the year 1986, or the best possible estimates of such data where actual data are not available.

2. Each Party shall provide to the Secretariat statistical data on its production, imports and exports of each of the controlled substances in Annex B and each of the transitional substances in Group I of Annex C, for the year 1989, or the best possible estimates of such data where actual data are not available, not later than three months after the date when the provisions set out in the Protocol with regard to the substances in Annex B enter into force for that Party.

* * *

ARTICLE 8: NON-COMPLIANCE

The Parties at their first meeting, shall consider and approve procedures and institutional mechanisms for determining non-compliance with the provisions of this Protocol and for treatment of Parties found to be in non-compliance.

* * *

ARTICLE 16: ENTRY INTO FORCE

1. This Protocol shall enter into force on 1 January 1989, provided that at least eleven instruments of ratification, acceptance, approval of the Protocol or accession there to have been deposited by States or regional economic integration organizations representing at least two-thirds of 1986 estimated global consumption of the controlled substances, and the provisions of paragraph 1 of Article 17 of the Convention have been fulfilled. In the event that these conditions have not been fulfilled by that date, the Protocol shall enter into force on the ninetieth day following the date on which the conditions have been fulfilled.

2. For the purposes of paragraph 1, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

3. After the entry into force of this Protocol, any State or regional economic integration organization shall become a Party to it on the ninetieth day following the date of deposit of its instrument of ratification, acceptance, approval, or accession.

ARTICLE 17: PARTIES JOINING AFTER ENTRY INTO FORCE

Subject to Article 5, any State or regional economic integration organization which becomes a Party to this Protocol after the date of its entry into force, shall fulfill forthwith the sum of the obligations under Article 2, as well as under Articles 2A to 2E, and Article 4, that apply at that date to the States and regional economic organizations that became Parties on the date the Protocol entered into force.

* * *

ARTICLE 20: AUTHENTIC TEXTS

In witness, whereof the undersigned, being duly authorized to that effect, have signed this Protocol. Done at Montreal this sixteenth day of September, One Thousand Nine Hundred and Eighty-Seven.

[*Editor's Note:* Annexes A-C include lists of substances that are regulated under the Protocol, along with information about their ozone-depleting potential. Generally, the chemicals listed on Annexes A and B have a much higher ozone-depleting potential than those chemicals listed on Annex C. Annex E was added to the Protocol in 1992, and includes only one chemical, methyl bromide, which is currently not regulated under the Protocol.]

ENTRY INTO FORCE

1. This Amendment shall enter into force on 1 January 1992, provided that at least twenty instruments of ratification, acceptance or approval of the Amendment have been deposited by States or regional economic integration organizations that are Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer. In the event that this condition has not been fulfilled by that date, the Amendment shall enter into force on the ninetieth day following the date on which it has been fulfilled.

2. For the purposes of paragraph 1, any such instrument deposited by a regional economic integration organization shall not be counted as additional to those deposited by member States of such organization.

3. After entry into force of this Amendment as provided under paragraph 1, it shall enter into force for any other Party to the Protocol on the ninetieth day following the date of deposit of its instrument of ratification, acceptance or approval.

NOTES

1. "The Montreal Protocol was the result of research at the frontiers of science combined with a unique collaboration between scientist and policymakers. Unlike any previous diplomatic endeavor, it was based on continually evolving theories, on state-of-the-art computer models simulating the results of intricate chemical and physical reactions for decades into the future, and on satellite-, land-, and rocket-based monitoring of remote gases measured in parts per trillion. An international agreement of this nature could not, in fact, have occurred at any earlier point in history." BENEDICK, *OZONE DIPLOMACY*, Ch. 2, (1991).

2. What chemicals are included in the Montreal Protocol and how are these chemicals controlled? How does the Protocol restrict trade with non-participating countries?

3. Developing countries are treated separately under the terms of the Protocol. Why was separate treatment necessary? How does separate treatment benefit these countries? See BENEDICK, *supra*, Ch. 12.

4. The European Community increasingly acts in concert on matters affecting its economy and the environment. How is this recognized in the Protocol?

5. The 12 nation European Community, despite its shared political, economic, and environmental values, disagreed with the United States throughout the negotiation of the Montreal Protocol. A catalyst for this disagreement was the fact that European Community industries, being less regulated, were not as prepared as United States industries for the phase out of CFC production. The United Nations Environment Programme (UNEP), a little known extension of the United Nations, continually provided a median of exchange for a world wide arbitration over what may prove to be the most important treaty ever negotiated. The role

played by UNEP is extremely important, considering the absolute requirement of a global solution. See *supra*, BENEDICK, Ch. 3 and 4.

6. In June 1990, interested parties convened in London to adopt a more stringent program for the reduction and elimination of ozone depleting chemicals. By that time 58 countries had signed the Protocol representing 99% of world production and 90% of the world's consumption of the regulated chemicals. Today more than 70 countries have signed the Protocol. See 56 Fed. Reg. 49,548-01, Sept. 30, 1991. The only significant industrialized countries not to accept the Protocol are China and India.

The regulation of ozone-depleting chemicals in the United States is carried out in accordance with Title VI of the Clean Air Act, which was enacted in 1990. Title VI was designed largely to assist the EPA in implementing the United States' obligations under the Montreal Protocol, but the law specifically provides that in the event of a conflict between any provision in Title VI and the Protocol, "the more stringent provision shall govern." § 614(b).

Title VI establishes specific deadlines for phasing out the production and consumption of certain Class I and Class II ozone depleting chemicals. §§ 604, 605. Class I substances include certain chlorofluorocarbons, as well as halons, carbon tetrachloride, and methyl chloroform. The EPA is required to add substances to the Class I list upon determining that they have an "ozone depleting potential"¹ of 0.2 or greater . . . Class II substances include certain listed hydrochlorofluorocarbons (which generally have a ozone-depleting potential of less than 10% that of CFC-11), and any other substances listed by the EPA upon a finding that they cause or contribute to harmful effects on the stratospheric ozone layer.

Title VI specifically authorizes the EPA to promulgate regulations establishing an accelerated schedule for phasing out the use of these chemicals based upon "credible current scientific information", "the availability of substitutes", or modifications to the Montreal Protocol. § 606(a). Any person may petition for the promulgation of such regulations, and the EPA must grant or deny a petition within 180 days. Regulations establishing the current schedule are found at 40 C.F.R. § Part 82, Subpart A (1996).

The Act also requires the EPA to promulgate rules (which have now been promulgated) —(a) regarding the use and disposal of Class I substances during the service, repair, or disposal of appliances and industrial process refrigeration (§ 608; 40 C.F.R. Part 82, Subpart C); (b) establishing standards for servicing motor vehicle air conditioners (§ 609; 40 C.F.R. Part 82, Subpart B); and (c) identifying nonessential products that release class I substances (and which are accordingly banned from sale or distribution) (§ 610; 40 C.F.R. Part 82, Subpart C); (d) to implement labeling requirements for containers containing Class I or class II substances (§ 611; 40 C.F.R. Part 82, Subpart E). In addition, the Act bans outright, effective January 1, 1994, but subject to certain exceptions, "any aerosol product or other pressurized dispenser" or "any plastic foam product" which contain Class II substances. § 610(d).

Finally, § 612 of the Act, establishes a "safe alternatives policy" designed to promote the use of safe substitutes for class I and class I substances. Section 612 was the subject of the following EPA rulemaking proceeding.

¹ Ozone depleting potential is defined as "a factor established . . . to reflect the ozone-depleting potential of a substance . . . as compared to chlorofluorocarbon-11 (CFC-11). § 601(1). Thus, a substance with one half the ozone depleting potential of CFC-11 would be rated at 0.5.

SIGNIFICANT NEW ALTERNATIVES POLICY (SNAP)

40 C.F.R. Parts 9 and 82

59 Fed. Reg. 13,044 (March 18, 1994)

ACTION: Final rule.

SUMMARY: This final rule promulgates the U.S. Environmental Protection Agency's (EPA) program for evaluating and regulating substitutes for ozone-depleting chemicals being phased out under the stratospheric ozone protection provisions of the Clean Air Act (CAA). In section 612 of the CAA, the Agency is authorized to identify and restrict the use of substitutes for Class I and II ozone-depleting substances where the Administrator has determined that other alternatives exist that reduce overall risk to human health and the environment. EPA is referring to the program that provides these determinations as the Significant New Alternatives Policy (SNAP) program. The intended effect of this final rule is to expedite movement away from ozone-depleting compounds by identifying substitutes that offer lower overall risks to human health and the environment.

In this final rule, EPA is both issuing decisions on the acceptability and unacceptability of substitutes and promulgating its plan for administering the SNAP program. To arrive at determinations on the acceptability of substitutes, the Agency completed a cross-media analysis of risks to human health and the environment from the use of various substitutes in different industrial end-uses. Results of this analysis are summarized in this final rule, which covers substitutes in the following sectors: Refrigeration and air conditioning, foam blowing, solvents cleaning, fire suppression and explosion protection, tobacco expansion, adhesives, coatings and inks, aerosols, and sterilants. Analysis of substitutes in a ninth sector, pesticides, will be completed, and the resulting decisions will be added to future SNAP determinations published in the Federal Register. These sectors comprise the principal United States industrial sectors that historically consumed large volumes of ozone-depleting compounds.

* * *

II. BACKGROUND*A. Regulatory History*

* * *

On November 15, 1990, then-President Bush signed the Clean Air Act Amendments (CAAA) of 1990. Title VI, section 604 of the amended CAA requires a phaseout of CFCs, halons, and carbon tetrachloride by 2000, which is identical to the London Amendments to the Montreal Protocol, but with more stringent interim reductions. Title VI also differs from the London Amendments by mandating a faster phaseout of methyl chloroform (2002 instead of 2005), a restriction on the use of hydrochlorofluorocarbons (HCFCs) after 2015, and a ban on the production of HCFCs after 2030. In Title VI, section 602, the CFCs, halons, carbon tetrachloride, and methyl chloroform are defined as Class I substances; HCFCs are referred to as class II substances. Appendix A of this final rule lists the Class I and Class II substances identified in the CAA.

In addition to the phaseout requirements, Title VI includes provisions to reduce emissions of Class I and II substances to the "lowest achievable level" in the refrigeration sector and to maximize the use of recycling and recovery upon disposal (section 608). It also requires EPA to ban certain nonessential products containing ozone-depleting substances (section 610); establish standards and requirements for the servicing of motor vehicle air conditioners (section 609); mandate warning labels on products made with or containing Class I or containing Class

II substances (section 611); and establish a safe alternatives program (section 612). The development and implementation of the safe alternatives program under section 612 is the subject of this final rule.

In October 1991, the National Aeronautics and Space Administration (NASA) announced new findings documenting ozone depletion over the last decade that was more severe than had previously been predicted by atmospheric modeling or measurements. In particular, NASA found 2.9 percent ozone depletion over the northern mid-latitudes over the past decade in summertime—the first time a trend showing ozone depletion had been detected in the U.S. during that time of year, when risks from depletion are greatest.

Partly in response to these findings, on February 11, 1992, then-President Bush announced an accelerated phaseout schedule for Class I substances as identified in the CAA, as amended, section 606. This final schedule, published in the Federal Register (58 Fed. Reg. 65,018; December 10, 1993), implements a January 1, 1996 phaseout of Class I chemicals. The President also ordered an accelerated review of substitutes that reduce damage to the ozone layer. The expedited phaseout schedule and the President's directive regarding alternatives added urgency to EPA's effort to review and list substitutes for Class I and II substances under section 612.

* * *

III. SECTION 612 PROGRAM

A. Statutory Requirements

Section 612 of the Clean Air Act authorizes EPA to develop a program for evaluating alternatives to ozone-depleting substances. EPA is referring to this new program as the Significant New Alternatives Policy (SNAP) program. The major provisions of section 612 are:

- *Rulemaking.* Section 612(c) requires EPA to promulgate rules making it unlawful to replace any Class I or Class II substance with any substitute that the Administrator determines may present adverse effects to human health or the environment where the Administrator has identified an alternative that (1) reduces the overall risk to human health and the environment, and (2) is currently or potentially available.
- *Listing of Unacceptable/Acceptable Substitutes.* Section 612(c) also requires EPA to publish a list of the substitutes unacceptable for specific uses. EPA must publish a corresponding list of acceptable alternatives for specific uses.
- *Petition Process.* Section 612(d) grants the right to any person to petition EPA to add a substance to, or delete a substance from the lists published in accordance with section 612(c). The Agency has 90 days to grant or deny a petition. Where the Agency grants the petition, EPA must publish the revised lists within an additional 6 months.
- *90-day Notification.* Section 612(e) requires EPA to require any person who produces a chemical substitute for a Class I substance to notify the Agency not less than 90 days before new or existing chemicals are introduced into interstate commerce for significant new uses as substitutes for a class I substance. The producer must also provide the Agency with the producer's unpublished health and safety studies on such substitutes.
- *Outreach.* Section 612(b)(1) states that the Administrator shall seek to maximize the use of federal research facilities and resources to assist users of Class I and II substances in identifying and developing alternatives to the use of such substances in key commercial applications.
- *Clearinghouse.* Section 612(b)(4) requires the Agency to set up a public clearinghouse of alternative chemicals, product substitutes, and alternative manufacturing processes that

are available for products and manufacturing processes which use Class I and II substances.

B. Guiding Principles

EPA has followed several guiding principles in developing the SNAP program:

1. *Evaluate Substitutes Within a Comparative Risk Framework.* The Agency's risk evaluation compares risks of substitutes to risks from continued use of ozone-depleting compounds as well as to risks associated with other substitutes. This evaluation considers effects due to ozone depletion as well as effects due to direct toxicity of substitutes. Other risk factors considered include effects on water and air quality, the potential for direct and indirect contributions to global warming, and occupational health and safety. Any effects found to pose a concern will be evaluated further to determine if controls are required. EPA does not believe that a numerical scheme producing a single index to rank all substitutes based on risks is appropriate. A strict quantitative index would not allow for sufficient flexibility in making appropriate risk management decisions that consider issues such as the quality of information supporting the decision, the degree of uncertainty in the data, the availability of other substitutes, and economic feasibility.

2. *Do Not Require That Substitutes Be Risk-Free To Be Found Acceptable.* Section 612(c) requires the Agency to publish a list of acceptable and unacceptable substitutes. The Agency interprets this as a mandate to identify substitutes that reduce risks compared to use of Class I or II compounds or to other substitutes for Class I or II substances, rather than a mandate to list as acceptable only those substitutes with zero risks. In keeping with this interpretation, the Agency believes that a key goal of the SNAP program is to promote the use of substitutes for Class I and II chemicals that minimize risks to human health and the environment relative to other alternatives. In some cases, this approach may involve designating a substitute acceptable even though the compound may be toxic, or pose other environmental risk of some type, provided its use reduces overall risk to human health and the environment as compared to use of Class I or Class II substances or other potential substitutes.

3. *Restrict Only Those Substitutes That are Significantly Worse.* As a corollary to the above point, EPA does not intend to restrict a substitute if it poses only marginally greater risk than another substitute. Drawing fine distinctions concerning the acceptability of substitutes would be extremely difficult given the variability in how each substitute can be used within a specific application and the resulting uncertainties surrounding potential health and environmental effects. The Agency also does not want to intercede in the market's choice of available substitutes, unless a substitute has been proposed or is being used that is clearly more harmful to human health and the environment than other alternatives.

4. *Evaluate Risks by Use.* Section 612 requires that substitutes be evaluated by use. Environmental and human health exposures can vary significantly depending on the particular application of a substitute. Thus, the risk characterizations must be designed to represent differences in the environmental and human health effects associated with diverse uses. This approach cannot, however, imply fundamental tradeoffs with respect to different types of risk to either the environment or to human health. For example, in the Agency's consideration of global warming as a criterion under SNAP, EPA has principally compared different global warming gases among themselves, as opposed to attempting to establish some methodology for comparing directly the effects of global warming and ozone depletion.

5. *Provide the Regulated Community With Information as Soon as Possible.* The Agency recognizes the need to provide the regulated community with information on the acceptability of various substitutes as soon as possible. Given this need, EPA has decided to expedite the review process by conducting initial risk screens for the major substitutes now known to the Agency and to include them in this final rulemaking. Future determinations on the acceptability of new substitutes will be published in quarterly updates to the SNAP lists.

6. *Do Not Endorse Products Manufactured by Specific Companies.* While the goal of the SNAP program is to identify acceptable substitutes, the Agency will not issue company-specific product endorsements. In many cases, the Agency may base its analysis on data received on individual products, but the addition of a substitute to the acceptable list based on that analysis does not represent endorsement of that company's products. Generally, placement on the list merely constitutes an acknowledgment that a particular product made by a company has been found to be acceptable under SNAP.

7. *Defer to Other Environmental Regulations When Warranted.* In some cases, EPA and other federal agencies have developed extensive regulations under other statutes or other parts of the CAA that address any potential cross- or inter-media transfers that may result from the use of alternatives to Class I and II substances. For example, ceasing to use an ozone-depleting compound may in some cases entail increased use of chemicals that contribute to tropospheric air pollution. These chemicals, such as volatile organic compounds (VOCs) or hazardous air pollutants (HAPs), are already regulated under other sections of the CAA, and determinations under the SNAP program will take these existing regulations into account. Where necessary, the Office of Air and Radiation will confer with other EPA program offices or federal agencies to ensure that any regulatory overlap is handled efficiently.

C. Implementation Strategy

Implementation of the SNAP program is directed towards fulfilling the general policy contained in section 612 of identifying substitutes that can serve as replacements for ozone depleting substances, evaluating their effects on human health and the environment, and encouraging the use of those substitutes believed to present lower overall risks relative both to the ozone depleting compounds being replaced and to other substitutes available for the same end-use. Implementation of this policy involves four key activities. The first is to develop, promulgate, and administer a regulatory program for identifying and evaluating substitutes. The second activity is to undertake a review of the existing substitutes based on criteria established for the program, and then to publish a list of acceptable and unacceptable substitutes by application. The third activity is to review additional substitutes as they are developed to allow their timely introduction into the marketplace. The fourth is to aggressively disseminate information about those substitutes found to pose lower overall risk through a clearinghouse and outreach program.

To expedite implementation of the SNAP program, EPA has not only developed a screening process for examining the alternatives, as discussed in this final rule, but has also completed an analysis of many key substitutes based on the criteria presented here. Section IX summarizes the results of this assessment. More detail on the steps leading up to this final rule and the implementation of the SNAP program is given below.

* * *

OZ TECHNOLOGY, INC. v. EPA

129 F.3d 631 (D.C. Cir. 1997)

HARRY T. EDWARDS, Chief Judge:

Section 612(c) of the Clean Air Act (“CAA” or “Act”) instructs the Administrator of the Environmental Protection Agency (“EPA” or “agency”) to promulgate rules that prohibit the replacement of ozone-depleting compounds with substances “which [she] determines may present adverse effects to human health or the environment.” In the instant case, EPA designated Petitioner OZ Technology Inc.’s (“OZ”) product HC-12a as an unacceptable substitute for CFC-12 (an ozone-depleting substance commonly known as “freon”) for end-uses other than industrial process refrigeration. 60 Fed. Reg. 31,092, 31,098 (1995). In so doing, EPA effectively banned HC-12a for those end-uses. *See* 40 C.F.R. § 82.174 (1996). Subsequently, EPA rejected a request by OZ, filed pursuant to regulations implementing section 612(d) of the Act, seeking to remove HC-12a from the list of unacceptable substitutes and add it to the list of acceptable substitutes. 61 Fed. Reg. 51,018 (1996). OZ then petitioned for review, challenging EPA’s initial decision to put HC-12a on the unacceptable list and the agency’s subsequent refusal to amend the list.

On the record at hand, we must reject the petition for review. As EPA found, OZ failed in this case to submit valid data supporting its claim that HC-12a should be added to the list of acceptable substitutes. In light of OZ’s acknowledgment that HC-12a was flammable, and EPA’s previous decision prohibiting a very similar compound manufactured by OZ for the same end-uses, EPA’s actions banning HC-12a reasonably satisfied its obligation under section 612 to reduce overall risk to human health and the environment.

I. BACKGROUND***A. The Statutory and Regulatory Regime***

Title VI of the CAA, as amended in 1990, requires the phase-out of CFC-12 and other substances that have the capability of depleting the stratospheric ozone layer. Section 612 of the Act instructs EPA to regulate replacement substances to reduce overall risk to human health and the environment. Section 612(c) requires EPA to publish a list of the substitutes prohibited for specific uses and a list of the substitutes that are safe alternatives for specific uses. *Id.* Section 612(d) of the Act grants any person the right to petition EPA to add a substance or to delete a substance from either of the lists published pursuant to section 612(c).

EPA promulgated regulations to implement section 612, known as the Significant New Alternatives Policy (“SNAP”) program. 59 Fed. Reg. 13,044, 13,147 (1994) (*codified at* 40 C.F.R. pt. 82). Under the SNAP program, any person who has developed a substitute for an ozone-depleting substance must notify EPA before introducing the substitute into interstate commerce. 40 C.F.R. § 82.176(a). The person must submit information concerning, among other things, the likely end-uses and flammability of the proposed substitute. *Id.* § 82.178(a)(3), (9). With respect to flammability, the submitter must provide the flash point and flammability limits of the product, as well as information on the procedures used for determining the flammability limits. *Id.* § 82.178(a)(9). If a substitute is flammable, “the submitter must analyze the risk of fire resulting from the use of [the] substitute and assess the effectiveness of measures to minimize such risk.” *Id.* “For substitutes that will be used in

consumer applications, documentation of testing results conducted by independent laboratories should be submitted, where available.” *Id.*

Once the information submitted to EPA is “adequate to support analysis of the submission,” *id.* § 82.180(a)(3), the agency decides, based on the information submitted and any other information available to EPA, whether the substitute is acceptable, unacceptable, or acceptable subject to certain use restrictions for the proposed end-uses. *Id.* § 82.180(b). Where EPA proposes to list a substitute as unacceptable for certain end-uses, EPA follows notice-and-comment rulemaking procedures. *Id.* § 82.180(a)(8)(ii). If EPA then determines that a substitute is unacceptable for a specific end-use, the SNAP program prohibits replacing ozone-depleting substances with the substitute proposed for that end-use. *Id.* § 82.174(b)-(d). Under section 612(d) of the Act, any person may petition EPA to amend existing listing decisions or to add a new substance to any of the SNAP lists. *Id.* § 82.184.

B. EPA's Designation of HC-12a as Unacceptable

OZ has developed a substance called HC-12a as a substitute for CFC-12. HC-12a has end-use applications in refrigeration and air conditioning, including motor vehicle air conditioning systems and household refrigerators and freezers. In March 1994, OZ began marketing HC-12a. Soon thereafter, EPA informed OZ that it was required under SNAP to submit a notice of intent to introduce HC-12a into interstate commerce. OZ sent documentation to EPA in a purported effort to comply with the SNAP notice requirement. In September 1994, however, EPA formally proposed to list HC-12a (identified as Hydrocarbon Blend B) as an unacceptable substitute for CFC-12 for end-uses other than industrial process refrigeration. 59 Fed. Reg. 49,108, 49,112 (1994).

OZ subsequently submitted comments to EPA, along with documentation to initiate a petition under section 612(d). The gist of OZ's position was that EPA should delete HC-12a from the “proposed unacceptable” list and add it to the list of acceptable substitutes. Because EPA had not promulgated a final rule on HC-12a, the documentation submitted by OZ to support a 612(d) petition was accepted as an additional comment on the proposal. Later in the comment period, other documents concerning the flammability risks of HC-12a were submitted to EPA, either by OZ or by other parties on its behalf. On June 13, 1995, EPA took final action listing HC-12a as an unacceptable substitute for end-uses other than industrial process refrigeration, citing concern about flammability. 60 Fed. Reg. at 31,098.

Prior to the action on HC-12a, EPA had designated as unacceptable a very similar product of OZ, namely OZ-12. OZ-12 (identified as Hydrocarbon Blend A) was included on the unacceptable list because of concerns over flammability and the lack of an adequate risk assessment showing that OZ-12 could be used in end-uses other than industrial process refrigeration. 59 Fed. Reg. 13,044, 13,082, 13,122-24 (1994). In processing the application for OZ-12, EPA officials explained to OZ, in at least one meeting, four letters, and a phone conversation, what was required in a valid risk assessment.

EPA's decision to designate HC-12a as unacceptable coincided with the agency's rejection of a section 612(d) petition submitted by OZ for OZ-12, requesting that EPA delete OZ-12 from the unacceptable list and add it to the acceptable list. 60 Fed. Reg. 49,407 (1995). On July 25, 1995, EPA wrote a letter to OZ stating that the company's submissions regarding the flammability risks of HC-12a were inadequate for the same reasons that the company's submissions for OZ-12 were inadequate. In an attachment to another letter which EPA sent to OZ that same day, EPA explained at length why the company's submissions regarding the flammability risks of OZ-12 were insufficient to warrant listing the compound as an acceptable

substitute. EPA's communications with OZ in July 1995 did not explain why additional documentation submitted by OZ for HC-12a but not for OZ-12 also was insufficient to warrant listing HC-12a as acceptable.

On August 14, 1995, OZ petitioned the United States Court of Appeals for the Ninth Circuit for judicial review of EPA's June 13, 1995 action listing HC-12a as an unacceptable substitute. The petition was transferred to this court, which granted EPA's motion to remand the administrative record. During the remand period, EPA addressed some of the documentation that had been submitted by OZ for HC-12a but not for OZ-12.

C. EPA's Denial of OZ's Section 612(d) Petition Regarding HC-12a

In December 1995, after OZ sought judicial review of EPA's final rule designating HC-12a as an unacceptable substitute, OZ submitted another petition to the agency pursuant to section 612(d), requesting that EPA list HC-12a as acceptable. ("1995 Petition"). EPA rejected the 1995 Petition, 61 Fed. Reg. 51,018 (1996), and issued a full response to the many documents submitted by OZ covering HC-12a. EPA concluded that OZ had not submitted a "scientifically valid, comprehensive risk assessment" that would justify changing the designation of HC-12a from unacceptable to acceptable. OZ petitioned for judicial review of this determination, and this court granted the parties' joint motion to consolidate the two petitions for review.

II. DISCUSSION

This court may grant a petition challenging an action of EPA under section 612 of the Act if it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 42 U.S.C. § 7607(d)(9)(A) (1994). This provision commands essentially the same standard of review as the analogous provision contained in the Administrative Procedure Act, 5 U.S.C. § 706 (1994). *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1064 (D.C. Cir. 1995). * * *

OZ contends that EPA acted arbitrarily and capriciously in initially designating HC-12a as an unacceptable substitute for CFC-12 for all end-uses other than industrial process refrigeration, and in rejecting OZ's 1995 Petition. According to OZ, EPA's decision was contrary to the documentation submitted in support of HC-12a. OZ also argues that EPA acted unlawfully in failing to provide guidance on the kind of data or risk analysis that the company was required to submit, beyond the documentation that was offered, in order for EPA to decide that HC-12a was safe under the CAA.

EPA responds that OZ had the burden of demonstrating through a scientifically valid risk analysis that HC-12a did not pose unacceptable flammability risks under CAA section 612(c). EPA also asserts that it reasonably determined that OZ failed to submit an adequate risk analysis, and that the agency therefore justifiably declined to decide whether the risks posed by HC-12a in fact were acceptable under the Act. We substantially agree with EPA on both counts. Given OZ's acknowledgment that its product is flammable, as well as EPA's mandate to regulate under section 612 to reduce overall risk to human health, EPA's actions with respect to HC-12a were reasonable.

Documents submitted on behalf of OZ to EPA recognized the flammability of HC-12a. Moreover, before considering OZ's submissions for HC-12a, EPA already had designated a very similar compound, OZ-12, as unacceptable because of flammability concerns. Given these circumstances, OZ was required to submit data on HC-12a, analyzing "the risk of fire resulting from the use of such a substitute and assess[ing] the effectiveness of measures to minimize such risk." 40 C.F.R. §§ 82.178(a)(9), 82.184(c). The regulations make it clear that EPA was

fully justified in rejecting OZ's section 612(d) petition when the company failed to supply adequate data to support that petition:

If the petition is inadequately supported, the Agency will query the petitioner to fill any data gaps before the 90-day review period begins, *or may deny the petition because data are inadequate.*

Id. § 82.184(d)(4) (emphasis added).

OZ claims that EPA was obligated to conduct its own tests on HC-12a before determining that it was unacceptable for OZ's intended end-uses. This position finds no support in the statute. OZ sought to introduce into the market a product with known risks to human health and the environment. In light of the statutory mandate of section 612, it is hardly surprising that EPA's regulations require the company to submit data defining the risk and assessing the effectiveness of measures to minimize the known dangers.

Arguably, during the proceedings involving OZ's products, EPA officials could have been more forthcoming in responding to OZ's requests for clarification on the contents of the required documentation. However, it is clear from the record that EPA stated in no uncertain terms that OZ was obligated to quantify data on the flammability of HC-12a, and to use scientifically valid studies, in order to enable the agency to consider listing the compound as an acceptable substitute for all end-uses. Moreover, OZ was put on notice of the requirement of a comprehensive risk analysis, as well as the contents of such an analysis, from the company's prior efforts to have the agency designate OZ-12 an acceptable substitute. EPA officials met with OZ about OZ-12, and sent several letters to OZ outlining the contents of a risk analysis. For particular proposed end-uses for OZ-12, EPA referred OZ to testing guidelines produced by the Society of Automotive Engineers, which the agency stated were acceptable. Thus, EPA did not leave OZ completely without direction.

In addition, a private consultant recommended to OZ the contents of what might have constituted an acceptable risk analysis for OZ-12. OZ conceded at oral argument that it did not undertake the procedures recommended by the consultant and did not ask EPA whether the recommended risk analysis would suffice to allow the agency to make an affirmative decision about any of its products under SNAP and the CAA. Although OZ may at times have felt stonewalled by EPA, OZ had only itself to blame for not pursuing leads offered by EPA officials and the outside consultant.

Thus, the principal focus of our inquiry is on EPA's contention that it reasonably determined that OZ failed to submit a valid risk analysis of HC-12a. During the course of its dealings with OZ, EPA produced three documents that, in increasing detail, explained why the data submitted by OZ were insufficient. For example, EPA pointed out that OZ's submissions analyzed refrigerants that were less flammable than HC-12a, or used a smaller charge of refrigerant than would be used in actual practice, or both, that the submissions failed to analyze all of the risks posed by the end-uses in question; and that the submissions failed to quantify risks at all, or attempted to do so with unrealistically low assumptions unsupported by empirical data.

Given the comprehensive scope of EPA's responses to OZ's submissions and OZ's utter lack of explanation as to how EPA's responses might be inaccurate or unfounded, we hold that EPA's determination that OZ failed to carry its burden under SNAP was justified. *See Ethyl Corp.*, 51 F.3d at 1059 (holding, under another provision of the CAA, that "[t]here is no doubt that [EPA] has the authority to make the factual determination of whether an applicant has submitted enough data . . . to satisfy the applicable standards, and a reviewing court must respect this role") (citing *Ethyl Corp. v. EPA*, 541 F.2d 1, 36-37 (D.C. Cir.1976) (*en banc*)).

Under the circumstances in this case, EPA was not required to render an affirmative decision that HC-12a was either safe or unsafe under the Act. It was enough for the agency to find that the company had failed to address the known risk of flammability in a scientifically valid, comprehensive risk analysis.

* * *

For the reasons discussed above, OZ's petitions for review are denied. * * *

NOTES

1. As suggested in the *OZ Technologies* case, the SNAP regulations require a petitioner seeking approval of a substitute for Class I or II ozone-depleting chemicals to provide the EPA with detailed information regarding the proposed substitute. 40 C.F.R. § 82.178 (1996). Once the EPA determines that the information from the applicant is complete and adequate, a 90 day review process begins. § 612(d); 40 C.F.R. § 82.180 (1996). The decision to approve or disapprove a substitute is based on seven criteria: (1) atmospheric effects and related health and environmental impacts; (2) general population risks associated with exposure to the substitute compounds; (3) ecosystem risks; (4) occupational risks; (5) consumer risks; (6) flammability; and (7) cost and availability of the substitute. 40 C.F.R. § 82.180(a)(7) (1996).

2. On what grounds does the EPA reject the proposed substitute put forward by OZ? What might OZ have done to increase its chances for approval? In light of the Court's decision what options remain available to OZ if it wants to further pursue approval of HC-12a?

12 REGULATION OF MOTOR VEHICLES AND FUELS

Motor vehicles are a substantial contributor to the air pollution problem. They are the principal source of hydrocarbons (HC) and carbon monoxide (CO) in our atmosphere, and they are a major source of nitrous oxides (NO_x). Until lead was removed from most of the gasoline sold in the United States (leaded gasoline sales were finally banned on January 1, 1996 in accordance with § 211(n)), motor vehicles were also the principal source of lead (Pb) in our atmosphere. Lead pollution remains a problem in many countries where leaded gasoline is still sold.

As previously described, the mixture of hydrocarbons and NO_x in sunlight forms photochemical oxidants, primarily ozone. Thus, motor vehicles account for a substantial portion of three of the six criteria pollutants—carbon monoxide, nitrous oxides and ozone. They also contribute smaller amounts of particulate matter. Regulation of motor vehicles and their fuels is thus essential to addressing the air pollution problem.

Regulation of the use of motor vehicle through transportation controls in SIPs is one way in which vehicle emissions are regulated under the Clean Air Act. *See* Chapter 6, *supra*. But the Act also prescribes standards for tailpipe emissions from motor vehicles and for fuels and fuel additives that are burned in motor vehicles. These standards are the subject of this chapter.

A. Emission Standards for New Motor Vehicles

Emission Standards: Motor vehicle emissions are regulated in accordance with § 202 of the Act. Section 202(a)(1) directs EPA to promulgate regulations prescribing standards “applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines which in [EPA’s] judgment cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare.” These standards apply for the useful life of the vehicle. Before the 1990 Amendments the “useful life” for passenger cars was defined by law as five years or 50,000 miles, whichever occurred first. The 1990 amendments doubled the useful life of vehicles to ten years or 100,000 miles for certain emission standards which become applicable after 1990. § 202(d)(1), *but see also* § 207(c)(4)(C), (5), (6). Testing, however, for purposes of determining in use compliance is limited to seven years or 75,000 miles. *Id.* The standards prescribed under § 202(a) take effect following a period determined by EPA to be necessary to permit the development and application of technology, taking into account the cost of compliance within the prescribed period. § 202(a)(2).

In accordance with § 202(a)(1), EPA has promulgated separate standards for light duty passenger vehicles, light duty trucks, heavy duty vehicles and motorcycles. 40 C.F.R. part 86.

The Act requires that standards for carbon monoxide, hydrocarbons, nitrous oxides and particulates reflect “the greatest degree of emission reduction achievable through the application of [available] technology . . . giving appropriate consideration to cost, energy, and safety factors . . .” § 202(a)(2).

The 1990 amendments required substantial reductions in hydrocarbon and NO_x emissions from most passenger cars and light duty trucks. The reductions will be carried out in two phases. Phase I began with the 1994 model year. § 202(g). Phase II is scheduled to begin in 2003 and could force emission reductions to about one-half of the 1994 levels. § 202(i). Phase II standards will be preceded by a study. Section 202(i)(2)(B) required the EPA to submit the study to the Congress by June 1, 1997. Based on this study, EPA must promulgate rules which either implement the standards set out in the law, implement some alternative standards, or delay implementation of more stringent standards. In promulgating these rules, EPA must consider whether further reductions are needed and cost-effective, and whether the technology for meeting the reductions will be available. *Id.*

Testing Program: Enforcement of the emission standards is carried out through a testing program. Samples of each new vehicle must be submitted by the manufacturer to EPA for testing. In particular, any emission control device on such vehicles must be tested. § 206(a)(1), (2). A certificate of conformity is issued for vehicles that comply with the regulations. Such certificates of conformity must be obtained before any motor vehicle can be sold in the United States. § 203(a)(1). Penalties up to \$10,000 may be imposed for each motor vehicle sold without the required certificate. § 205. EPA may also randomly test new vehicles for which a certificate of conformity has been issued to help insure actual conformity. § 206(b). If all or any part of the vehicles so tested do not conform, EPA may suspend or revoke the certificate of conformity (§ 206(b)(2)), unless the manufacturer pays a nonconformance penalty (NCP). § 206(g)(1). The Act also provides for testing of vehicles during their “useful life.” If substantial numbers of any class of vehicles are determined not to conform throughout their useful life, the manufacturer must submit a plan “for remedying the nonconformity.” § 207(c)(1). In addition, an individual purchaser may require the manufacturer to remedy a nonconforming vehicle at the manufacturer’s cost if such nonconformity occurs during its useful life. § 206(h)(2).

California Emission Standards: Section 209(a) of the Act generally preempts state regulation of motor vehicle emissions regulated under Title II. Section 177, however, provides an exception for California and states that opt to follow California standards. To take advantage of this “California exception” three requirements must be met: (1) an opt-in state must adopt standards identical to California’s; (2) California must receive a waiver from EPA for its standards; and (3) both California and opt-in states must adopt their standards at least two years before the beginning of the model year to which they apply. *Id.* In 1990, Congress amended § 177 to make clear that opt-in states could not limit the sale of vehicles certified as meeting California standards or “take any action” that would have the effect of requiring the manufacture of a vehicle different from that certified to meet California standards. This change was designed to make clear that opt-in states could not adopt standards that might be construed to require manufacturers to develop a “third vehicle” different from that which meets federal or California standards.

Miscellaneous Requirements: Several additional new requirements were imposed by the 1990 Amendments. They include the following:

On-board Vapor Recovery: Section 202(a)(6) requires EPA to promulgate rules to address emissions which occur from vehicle refueling.

“Cold Start” Standards: Section 202(j) establishes a special CO standard for “cold starts” (below 20° F) which were to be phased in over three years beginning in 1994.

Summertime “Ozone-prone” Conditions: EPA is required to promulgate hydrocarbon standards to address vehicle emissions during “ozone prone” summertime conditions within 18 months after passage of the law, or report to Congress as to the reasons for the delay. § 202(k).

Hazardous Air Pollutants: Section 202(l)(1) required EPA to prepare a study by May 15, 1992 on the “need for, and feasibility of, controlling emissions of toxic air pollutants which are . . . associated with motor vehicles and motor vehicle fuels. Under § 202(l)(2), EPA was required to promulgate standards to control hazardous air pollutant emissions from motor vehicles and fuels by mid-1995. EPA announced the availability of its *Motor Vehicle-Related Air Toxics Study* on May 7, 1993, almost a year late. 58 Fed. Reg. 27,283 (1993). As of early 1998, EPA had not promulgated standards as required by § 202(l)(2), but as a result of a law suit filed by the Sierra Club, it had entered a consent decree setting a schedule for the promulgation of such standards. 61 Fed. Reg. 52,941 (1996); see also, 62 Fed. Reg. 33,625 (1997).

On-board Diagnostics: Section 202(m) requires vehicles to have on-board diagnostics systems to warn of catalytic converter malfunctions and oxygen sensor malfunctions by model year 1996.

Leaded Gas Engines: The Act prohibits the manufacture and sale of any vehicle which requires the use of leaded gas after model year 1992.

Urban Bus Standards: EPA was required to promulgate rules by January 1, 1992 setting PM standards for urban buses at no less than 50% of current standards. These are to take effect in the 1994 model year. § 218(b). Also, if EPA finds that buses are not capable of meeting these standards during their useful life, EPA must require that all buses operated in metropolitan areas with a 1980 population greater than 750,000 use low polluting fuels, such as methanol, ethanol, propane or natural gas. § 218(c)

Clean Fuel Vehicles: States with serious or worse ozone nonattainment areas, or with CO nonattainment areas with populations in excess of 250,000 people, are required to revise their SIPs to establish a clean fuel vehicle fleet program beginning in 1998. § 246. This program will be phased in over three years for light duty vehicles (going from 30% to 70%), and is established at 50% for heavy duty vehicles. § 246(b).

NATURAL RESOURCES DEFENSE COUNCIL V. RUCKELSHAUS

21 BNA Env'tl. Rep. Cases 1953 (D.D.C. 1984)

PRATT, J:

Plaintiff, a national environmental organization, has brought suit against the Administrator of the United States Environmental Protection Agency (EPA), challenging the latter's failure to promulgate regulations governing the emission of oxides of nitrogen (NO_x) and particulate matter from heavy duty vehicles and engines¹ and providing for

¹ Heavy duty vehicles are defined by the Act to include a “truck, bus or other vehicle manufactured primarily for use on the public streets, roads and highways . . . which has a gross vehicle weight . . . in excess of six thousand pounds,” § 202(b)(3)(C).

non-conformance penalties (NCP's) for vehicles and engines which do not meet such standards. The Administrator's duty to issue these standards arises from the Clean Air Act, 42 U.S.C. §§ 7401 *et seq.* (the Act). Plaintiff has moved this Court for summary judgment pursuant to Rule 56, Fed. R. Civ. P., declaring that defendant has failed to fulfill non-discretionary statutory duties under the Act, and for an injunction requiring defendant to comply with the Act forthwith. Having considered plaintiff's motion, defendant's opposition, plaintiff's reply, and the entire record herein, we grant plaintiff's motion and order defendant's compliance with the Act in accordance with a definite schedule.

DISCUSSION

The Clean Air Act provides for regulation by the EPA, pursuant to certain timetables, of emissions of harmful pollutants from motor vehicles. *See NRDC v. EPA*, 655 F.2d 318, 320-322 (D.C. Cir. 1981). Certain portions of the Act, incorporated by § 224 of the 1977 Amendments, specifically direct the establishment by EPA of standards governing the emission of NO_x and particulate matter from heavy duty vehicles and engines. The legislative history of the amendments demonstrates that Congress regarded the specified standards and regulations as a matter of great urgency. *See, e.g.*, H.R. Rep. No. 95-294 at 272; S. Rep. No. 95-127 at 61.

The sections of the Act at issue here specify that the EPA Administrator shall prescribe for the 1985 motor vehicle model year standards requiring reduction in NO_x emissions from heavy duty vehicles of at least 75% over the 1979 baseline model year. §§ 202(a)(3)(A)(i), (ii). The Administrator may deviate from this requirement only by temporarily revising the standards, *id.*, at § 7521(a)(3)(B), or by changing them, *id.*, at § 202(a)(3)(E), in either case pursuant to notice-and-comment procedures. Moreover, the Administrator must exercise his or her authority to revise or change the standards no later than four years in advance of the 1985 model year. *Id.*

Meanwhile, the Act also mandates that the Administrator prescribe standards for particulates applicable to "classes or categories of vehicles manufactured during and after model year 1981." § 202(a)(3)(A)(iii). Finally, the Act specifies that the EPA promulgate, no later than one year following enactment of the 1977 amendments—that is, by August 7, 1978—certain non-conformance penalties. § 206(g)(3). Those penalties would be paid by manufacturers which sold heavy duty vehicles or engines which do not conform with those applicable emission standards established pursuant to § 202.

Quite apart from the statutory language of the 1977 amendments, it is beyond doubt that Congress deemed the directives contained in the foregoing sections of the Act as mandatory. For example, the Conference Report dealing with the Amendments declared that the standards which "mandate" a 75% reduction of NO_x heavy vehicle emissions over the baseline year will take effect in model year 1985, while the particulate standards "are to become effective as expeditiously as practicable . . . but in no event later than the 1981 model year." H.R. Rep. No. 95-564, 95th Cong., 1st Sess. 163 (1977). This mandatory quality of EPA's responsibilities concerning the NO_x regulations has been affirmed by both the Court of Appeals for this Circuit, *NRDC v. EPA*, 655 F.2d at 325, and by the agency itself.

Despite Congress' determination to establish a specific, unqualified timetable for the promulgation of regulations governing NO_x emissions from heavy vehicles, the EPA has done virtually nothing to establish those prescribed standards. Although EPA issued an Advance Notice of Proposed Rulemaking regarding NO_x standards during the waning days of the Carter Administration, 45 Fed. Reg. 5838, it has done nothing since that time: no promulgation of regulations, no announcement of proposed standards, and no attempt to revise temporarily or change the standards scheduled to be in place by 1985. The same inaction characterizes EPA's

treatment of the subject of particulate standards. EPA issued proposed standards on January 7, 1981, 45 Fed. Reg. 1910, which were already too late to apply to vehicles manufactured in 1981, as they were supposed to. Some three and one-half years later, EPA has still not issued final regulations. Finally, with respect to non-conformance penalties, EPA has never issued regulations covering such penalties for NO_x or particulate emissions. Congress specified that such penalties should be promulgated no later than August 7, 1978—more than six years ago. In each of the foregoing cases, EPA has repeatedly declared that it would shortly issue the required regulations, only to in fact fail to meet any of its self-imposed timetables.

We find no reasonable grounds for the delays thus far incurred, or any future postponement which would attend defendant's proposed timetable. Indeed, other than a somewhat irrelevant discussion of certain steps in the administrative process and the complexity of the issues EPA must address before issuing final regulations, defendant's brief is devoid of justification for the agency's laggard performance of its mandatory duties. It is nothing short of astonishing that the agency seeks additional time to promulgate the required regulations when it offers not one shred of evidence as to why it has thus far failed to issue those standards. We understand the complexity of the issues facing EPA in the area of NO_x and particulate emissions, not to mention the sensitivity of the novel technologies involved. We similarly recognize that EPA must compile an adequate record and explain the reasons for its decisions. We have no reason to doubt that EPA is working "diligently", Def. Mem. at 7, to introduce the new technologies in the production of heavy vehicles. Yet Congress was aware of all these factors when, as the deliberate result of several years of debate, it concluded in the 1977 Amendments to the Clean Air Act that a specific timetable was called for to accelerate the cleanup of this country's air.

Although EPA asserts that it needs more than a year from the present time to promulgate regulations for NO_x and particulate emissions, we well as for non-conformance penalties, Congress has mandated that they already be in place at this time. We concur with another district court which, when faced with a similar case of EPA foot-dragging, noted that "[i]f Congress wanted to leave the Administrator with the flexibility to implement regulation based upon [his] own judgment of the most desirable time schedule, it obviously knew how to do so. Clearly, however, it did not." *State of New York v. Gorsuch*, 554 F. Supp. 1060, 1064 (S.D.N.Y. 1983).

The only basis on which this court could extend the time for compliance within the Congressionally-mandated time limit—or deny summary judgment for plaintiffs—is if it found that it would be infeasible or impossible for the EPA, acting in good faith, to meet the deadline. The Court of Appeals for this Circuit has established the courts may excuse performance only for reasons of limited staff or budget, or because the agency requires further study of substantive issues. *Alabama Power Co. v. Costle*, 636 F.2d 323, 359 (D.C. Cir. 1980); *NRDC v. Train*, 510 F.2d 692, 712-13 (D.C. Cir. 1975). In such circumstances, the agency, not the complaining party, bears the burden of demonstrating the existence of an impossibility. *Alabama Power*, at 359. Courts must 'scrutinize such claims carefully,' *Train*, at 713, since '[t]he agency's burden in such case is especially heavy.' *Alabama Power*, at 359.

The EPA makes no showing of impossibility or infeasibility. It does not argue that it suffers from any staff or budgetary handicaps. Nor does it present any evidence of need for further study, technical or otherwise, of the major issues involved in NO_x and particulate emissions from heavy duty vehicles and engines. Instead, it merely asserts that if the agency attempted to meet "more pressing schedules than those presently in effect, the Agency probably would be unable to promulgate sound rules, adequately supported by the administrative record." When all we have before us is this remarkably abstract and obvious declaration that EPA must have defensible regulations and statements of purpose, we think it is clear that "this

evidence does not demonstrate 'impossibility,' but rather a difference in rulemaking philosophy from that evinced by Congress." *State of New York v. Gorsuch*, 554 F. Supp. at 1066. As such, defendants fail to raise an issue of material fact which would preclude the issuance of an order by this court requiring compliance with the Congressional mandate. "To ignore or modify the statutory timetable would be to flout the considered judgment of Congress." *Id.*, at 1063.

* * *

ORDER

Upon consideration of plaintiff's motion for summary judgment, defendant's opposition, plaintiff's reply, and the entire record herein, and having found that there is no genuine issue as to material fact and that plaintiff is entitled to judgment as a matter of law, it is by the court this 14th day of September, 1984,

ORDERED that plaintiff's motion for summary judgment be and the same hereby is granted; and it is

DETERMINED AND DECLARED that defendant has a non-discretionary statutory duty to establish standards for emission of oxides of nitrogen (NO_x) and particulate matter from heavy-duty vehicles and engines pursuant to the Clean Air Act, §§ 202(a)(3)(A)(i), (iii), and to promulgate regulations specifying penalties to be paid by manufacturers for selling heavy-duty vehicles or engines not in conformity with such emission standards, § 206(g), and that defendant is in violation of the Act for failing to do so; and it is

ORDERED that defendant comply FORTHWITH with the Act by establishing proposed standards for NO_x and particulate emissions from heavy-duty vehicles or engines and publishing the same in the Federal Register no later than October 15, 1984, and final regulations for the same no later than March 15, 1985; and it is

ORDERED that defendant comply with the Act by publishing proposed generic non-conformance penalty regulations no later than March 15, 1985, and final generic NCP's no later than August 31, 1985; and it is

ORDERED that defendant comply with the Act by publishing proposed specific non-conformance penalty regulations no later than August 31, 1985, and final specific NCP's no later than December 31, 1985; and it is

FURTHER ORDERED that this court shall retain continuing jurisdiction over this matter until defendant has fully complied with the terms of this order.

NOTES

1. The court suggests that EPA had failed to promulgate rules to implement the statutory emission standards for NO_x and particulates, not because of an inability to do so within the statutory time frame, but rather because of a difference of philosophy. Clearly, EPA lacks the authority to override a congressional mandate, but which body is in a better position to set specific standards for tailpipe emissions—EPA or the Congress? Would you be less reluctant to extend greater authority to EPA to prescribe such standards if it were established as an independent regulatory commission such as the Securities and Exchange Commission, the Nuclear Regulatory Commission, or the Federal Trade Commission? Why or why not?

2. As the District Court notes, the Court of Appeals for the District of Columbia Circuit has excused performance by agencies of specific statutory mandates for reasons of limited staff or budget, or because further study is necessary. Under such circumstances,

should the court demand that the agency promulgate interim standards based on the best available information?

3. EPA promulgated standards for NO_x and particulates for heavy duty vehicles on March 15, 1985. 50 Fed. Reg 10,606 (1985). NCP rules were published on August 30, 1985. 50 Fed. Reg 35,388 (1985). A subsequent challenge to the NO_x and particulates rules was largely unsuccessful. *Natural Resources Defense Council v. Thomas*, 805 F.2d 410 (D.C. Cir. 1986). In upholding the rules, the court found—(1) that EPA was not required to set NO_x and particulate standards according to what the technological leader was able to achieve; (2) standards could be established on the basis of technology not yet available; and (3) EPA had to give manufacturers a four-year lead time notwithstanding their own delay in promulgating regulations.

NATURAL RESOURCES DEFENSE COUNCIL v. EPA

655 F.2d 318 (D.C. Cir. 1981)

MIKVA, Circuit Judge:

These consolidated cases present a variety of challenges to actions of the Environmental Protection Agency (EPA) in setting standards to govern emissions of particulate matter and oxides of nitrogen from diesel vehicles. The Natural Resources Defense Council (NRDC) argues that the agency's actions do not adequately protect the public health; General Motors Corporation (GM) and Intervenor Mercedes-Benz of North America, Inc., and Volkswagen of America, Inc., assert that the EPA did not give adequate consideration to safety factors, and that, in a variety of ways, the standards are too strict. Finding that the agency has stated adequate reasons for its decisions, and that its actions are consistent with statute, we uphold the challenged regulations in their entirety.

I. THE REGULATORY FRAMEWORK

The EPA is authorized by the Clean Air Act (Act) to regulate emissions of harmful pollutants from motor vehicles. The Act itself specifies the quantity of acceptable emissions from light-duty vehicles for three classes of pollutants: carbon monoxide, hydrocarbons, and oxides of nitrogen. Act § 202(b)(1). Section 202(a)(1) of the Act confers on the EPA Administrator the general power to prescribe by regulation “standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” These provisions are supplemented and qualified by various specific provisions relating to particular classes of vehicles or pollutants. *E.g.*, §§ 202(a)(3)(A)(i), 202(a)(3)(F), 202(b)(6)(A).

The statutory standard for hydrocarbon emissions from light-duty vehicles is an absolute one. For models manufactured from 1977 to 1979, hydrocarbon emissions may not exceed 1.5 grams per vehicle mile; for those manufactured from 1980 on, the standards must require a reduction of at least ninety percent from the emission standards applying in 1970. Act § 202(b)(1)(A). The statutory standards for carbon monoxide and oxides of nitrogen are also absolute, but they are subject to a variety of waivers for certain manufacturers who lack the technological capacity to comply. *See* §§ 202(b)(1)(B), 202(b)(5), 202(b)(6).

The emission standards set by the EPA under its general regulatory power, in contrast, are “technology-based”—the levels chosen must be premised on a finding of technological feasibility. Section 202(a)(2) of the Act provides that standards promulgated under section 202(a)(1) shall not take effect until “after such period as the Administrator finds necessary to permit the development and application of the requisite technology.”

The requirement that emission standards be technologically achievable highlights the need for the EPA’s power to divide the broad spectrum of motor vehicles into classes or categories. *See* §§ 202(a)(1), 202(a)(3)(A)(iv). Manufacturers produce a wide variety of motor vehicles of different sizes, some using different engine technologies resulting in unusual emission characteristics. In particular, diesel engines use a different fuel, emit exhaust at a lower temperature, and produce a different distribution of pollutants than traditional gasoline engines. For example, diesel carbon monoxide levels are typically lower than those from gasoline vehicles, *see* 45 Fed. Reg. 5480, 5493 n.192 (1980), but diesel vehicles produce particulate emissions at thirty to seventy times the rate of gasoline vehicles, *see* 45 Fed. Reg. 14,496 (1980), and also produce higher levels of the unregulated pollutants sulfur dioxide and benzo(a)pyrene, *see* 45 Fed. Reg. 5480, 5489 (1980).

The present challenges concern the EPA’s promulgation of standards governing particulate emissions from light-duty diesel vehicles and light-duty diesel trucks,³ and the EPA’s waiver of the statutory standard for oxides of nitrogen for light-duty vehicles. The EPA’s particulate standard and NO_x decisions are appropriately linked in the present proceeding because current technology creates an unfortunate trade-off between particulate control and control of oxides of nitrogen. The primary technique used today for reducing NO_x emissions is exhaust gas recirculation (EGR). While lowering the NO_x content of the exhaust, EGR increases the particulate content, and “the greater the EGR rate, the greater the increase in particulate emissions.” Environmental Protection Agency, Regulatory Analysis [of] Light-Duty Diesel Particulate Regulations 33 (1980) [hereinafter cited as Regulatory Analysis]. Thus the stringency of a technology-based particulate standard depends on the level of the NO_x standard concurrently applied. We consider the EPA’s actions and the NRDC and industry challenges in turn.

³ The statute defines only the term “heavy-duty vehicles”: The term “heavy-duty vehicle” means a truck, bus, or other vehicle manufactured primarily for use on the public streets, roads, and highways (not including any vehicle operated exclusively on a rail or rails) which has a gross vehicle weight (as determined under regulations promulgated by the Administrator) in excess of six thousand pounds. Such term includes any such vehicle which has special features enabling off-street or off-highway operation and use. Act 202(b)(3)(C) (added by the Clean Air Act Amendments of 1977, Pub.L.No. 95-95, § 223, 91 Stat. 685). This court held in *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 639-40 (D.C. Cir. 1973), that the legislative history of the 1970 amendments demonstrates that the term “light-duty vehicles” as used in section 202(b) is essentially synonymous with “passenger cars.” The EPA’s current definition of “light-duty vehicles” includes any “passenger car or passenger car derivative capable of seating 12 passengers or less.” 40 C.F.R. § 86.077-2 (1980). The definition of “light-duty truck” applicable to the particulate regulations, *see* 45 Fed. Reg. 14,496 n.1 (1980); 40 C.F.R. §§ 86.081-2(a), 86.080-2 (1980), is as follows: “Light-duty truck” means any motor vehicle rated at 8500 pounds (gross vehicle weight rating) or less which has a vehicle curb weight of 6000 pounds or less and which has a basic vehicle frontal area of 45 square feet or less, which is: (1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or (2) Designed primarily for transportation of persons and has a capacity of more than 12 persons, or (3) Available with special features enabling off-street or off-highway operation and use. 40 C.F.R. § 86.079-2 (1980). Thus, some light-duty trucks are heavy-duty vehicles, while other light-duty trucks are neither heavy-duty vehicles nor light-duty vehicles within the meaning of the Act. *See* 44 Fed. Reg. 40,784, 40,784-86 (1979).

II. THE PARTICULATE STANDARDS

The EPA announced its intention to promulgate standards for particulate emissions from light-duty diesels on February 1, 1979. *See* 44 Fed. Reg. 6650 (1979). The proposed standards would have limited diesel particulates to 0.60 grams per vehicle mile (gpm) in model year 1981, and to 0.20 gpm in model year 1983. The agency concluded that a single standard, governing all light-duty vehicles, was the preferable regulatory strategy, although 1979 certification data indicated that diesel particulate performance among those vehicles ranged from the 0.23 gpm achieved by the Volkswagen Rabbit to the 0.84 gpm emitted by the Oldsmobile 350. *Id.* at 6651. Furthermore, these restrictions would have applied equally to light-duty vehicles and light-duty trucks. *Id.* at 6654-55.

After analyzing the comments elicited by its notice of proposed rulemaking, the EPA promulgated as final standards a modification of the rules originally announced. *See* 45 Fed. Reg. 14,496 (1980). The limit of 0.60 gpm was retained, but its effective date was postponed to model year 1982, because the rulemaking process had absorbed so much time that testing and certification of 1981 models was no longer feasible. *Id.* at 14,497. The agency concluded that the technology necessary to make the 0.20 gpm standard feasible would probably not be developed in time for implementation in 1983 model vehicles; 1984 was a more likely goal, but the effective date was postponed to model year 1985 to give sufficient margin for error. *Id.* at 14,498. Finally, the EPA believed that light-duty trucks would not be able to perform as well as light-duty vehicles, and the 1985 standard for light-duty trucks was therefore adjusted to 0.26 gpm. *Id.* at 14,497.

The auto industry petitioners do not challenge the 1982 standard of 0.60 gpm, but they vigorously deny the likelihood that technology will be available to meet the lower standards in 1985. In setting the 1985 standards, the EPA predicted that a currently experimental particulate control device, known as a "trap-oxidizer," would be perfected early enough to allow its mass production and installation in 1985 model diesel vehicles. The manufacturers argue that this prediction lacked a sufficient evidentiary basis, and that the agency's action must therefore be invalidated as failing to meet the requirement of reasoned decisionmaking. They also argue that the EPA gave inadequate consideration to the safety risks involved in trap-oxidizer technology.

NRDC insists that the EPA's entire regulatory strategy is an inadequate response to the agency's statutory mandate to protect the public health. The EPA deliberately set a single standard for all light-duty diesel vehicles, predicting that even the worst performing diesel could meet it. NRDC argues that regulatory choice is inconsistent with the EPA's statutory responsibilities; it urges a variable standard, imposing more rigorous requirements on better performing vehicles. NRDC also urges that the agency failed to consider the risks posed by diesel particulate as a carcinogen, and that in giving "appropriate consideration" to cost as a factor in standard-setting, it should have tried to discourage purchase of polluting vehicles through economic disincentives. Finally, NRDC attacks the postponement of the 0.20 gpm standard from 1984 to 1985 as unnecessary and irresponsible.

* * *

B. Technological Feasibility

The EPA's choice of the 0.20 gpm standard for light-duty diesels in 1985 was the result of adjusting current diesel particulate emission data by the percentage of reduction expected from certain technological improvements, most notably the trap-oxidizer. The manufacturers' attack on the standard focuses on the EPA's prediction concerning the probable pace of development of trap-oxidizer technology. Before examining the details of the agency's

reasoning and the industry challenges, however, we find it useful to discuss the legal standard that governs our inquiry.

1. The Standard of Review

* * *

In the present case, GM attacks the EPA's estimation of the period of time "necessary to permit the development and application of the requisite technology" to achieve compliance with the 1985 particulate standards, *see* § 202(a)(2). The agency has determined that the technology will be available in time, and now seeks to defend its conclusion as a product of reasoned decisionmaking. Such predictions inherently involve a greater degree of uncertainty than estimations of the effectiveness of current technology. If we judge the EPA's action by the standard of certainty appropriate to current technology, the agency will be unable to set pollutant levels until the necessary technology is already available.

* * *

This court has upheld the agency's power to make such projections, while recognizing that it is "subject to the restraints of reasonableness, and does not open the door to 'crystal ball' inquiry." *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 629 (D.C. Cir. 1973). The Clean Air Act requires the EPA to look to the future in setting standards, but the agency must also provide a reasoned explanation of its basis for believing that its projection is reliable. This includes a defense of its methodology for arriving at numerical estimates. *Id.*

* * *

The time element in the EPA's prediction affects our reviewing task in three distinct ways. First, it introduces uncertainties in the agency's judgment that render that judgment vulnerable to attack. At the same time, however, the time element gives the EPA greater scope for confidence that theoretical solutions will be translated successfully into mechanical realizations, for "the question of availability is partially dependent on 'lead time', the time in which the technology will have to be available." *Portland Cement Ass'n v. Ruckelshaus*, 486 F.2d 375, 391 (D.C. Cir. 1973), *cert. denied*, 417 U.S. 921 (1974). Finally, the presence of substantial lead time for development before manufacturers will have to commit themselves to mass production of a chosen prototype gives the agency greater leeway to modify its standards if the actual future course of technology diverges from expectation.

The relevance of lead time, and of the ability to modify standards in light of future developments, to the degree of justification the agency must offer may be seen in this court's opinion in *International Harvester Co. v. Ruckelshaus*, 478 F.2d 615 (D.C. Cir. 1973). That case, despite numerous dissimilarities to the present one, provides a useful point of reference, and all the parties seek to claim it as their own. In *International Harvester*, the court reversed the EPA's refusal to suspend for one year strict new 1975 model year emission standards that had been set by Congress in the 1970 amendments. This court, reviewing in early 1973 an EPA decision of May 1972, stressed the harm that would result from "a relaxation of standards, and promulgation of an interim standard, at a later hour—after the base hour for 'lead time' has been passed, and the production sequence set in motion." *Id.* at 637. Too late a relaxation would penalize technologically advanced firms, like Ford, which would already have begun manufacture of vehicles that achieved better emission control at the expense of road performance. For this and other reasons, the hardship resulting if a suspension were mistakenly denied outweighed the risks from a suspension needlessly granted. Because of that balance of hardships, the court probed deeply into the reliability of the EPA's methodology. The present case is quite different; the "base hour" for commencement of production is relatively distant, and until that time the probable effect of a relaxation of the standard would

be to mitigate the consequences of any excessive strictness in the initial rule, not to create new hardships.

The significance of the time factor in *International Harvester* was increased by the fact that the EPA was not predicting future technological advances, but rather was imposing an interpretation on current industry data. That data uniformly indicated that the standards were not being met, yet the EPA claimed that "adjustments" of the data demonstrated the likelihood of compliance. But the court concluded that the agency had failed to demonstrate the reliability of its methodology sufficiently to defend its reinterpretation of apparently adverse data.

* * *

To apply these general considerations to our task of review in the present case, we must examine the nature of the EPA's determination. The agency has predicted that the manufacturers will be able to develop a satisfactory version of the trap-oxidizer in the time remaining. This device was designed specifically for the purpose for which EPA intends it, and prototypes have achieved partial success. GM itself has characterized trap-oxidizers as "[t]he most promising particulate traps," and has admitted that "current program status [would] indicate a possibility of 1985 model year production." General Motors Response to EPA Notice of Proposed Rulemaking 132, 175 (1979) [hereinafter GM Response]. The EPA's decision must be judged in terms of record evidence available in early 1980, allowing a "time frame of 2 - 2½ years for completion of the design development phase [and] 2 - 2½ years of production lead time." 45 Fed. Reg. 48,133, 48,139 (1980).

Given this time frame, we feel that there is substantial room for deference to the EPA's expertise in projecting the likely course of development. The essential question in this case is the pace of that development, and absent a revolution in the study of industry, defense of such a projection can never possess the inescapable logic of a mathematical deduction. We think that the EPA will have demonstrated the reasonableness of its basis for prediction if it answers any theoretical objections to the trap-oxidizer method, identifies the major steps necessary in refinement of the device, and offers plausible reasons for believing that each of those steps can be completed in the time available. If the agency can make this showing, then we cannot say that its determination was the result of crystal ball inquiry, or that it neglected its duty of reasoned decisionmaking.

2. The Time "Necessary to Permit the Development and Application of the Requisite Technology"

* * *

The EPA has identified a number of strategies for extracting particulates from diesel exhaust, but the 1985 standard was set in reliance on one preferred method and must stand or fall with the agency's prediction that that method will be available in time. This favored device is the trap-oxidizer, a mechanism that filters out particulates and then periodically incinerates its catch in order to maintain the trapping capacity of the filter.

The trap-oxidizer is essentially a compromise between two other particulate reduction strategies. At one extreme, the vehicle could rely on a mechanical filter alone—but unless that filter were somehow able to maintain its trapping efficiency indefinitely, it would periodically need either replacement or cleaning. At the other extreme, particulates could be continuously incinerated in a catalytic converter—but difficult engineering problems accompany the resulting need to maintain sufficient temperature in the converter (c. 1000° F.) and to keep the particulate matter inside the converter long enough to be burned. Citing the technical barriers to continuous incineration and the behavioral barriers to periodic restoration of a filter by car owners, the EPA recognized the trap-oxidizer as "the preferred method" of particulate control.

Regulatory Analysis at 47-50. The trap-oxidizer combines the short-term technical superiority of a filter with the long-term usefulness of a converter.

The EPA has predicted that trap-oxidizers will be available for use in model year 1985 vehicles. As the agency has repeatedly observed, the trap-oxidizer is familiar and unobjectionable as a concept. It is not only theoretically sound experimental data demonstrate that periodic incineration can maintain efficiency for over 10,000 miles. But to date, no filter material has been found that can withstand periodic incineration of the accumulated particulates throughout the 50,000-mile useful life of the vehicle²⁶ while maintaining a high level of trapping efficiency. The agency noted that

the best durability of a trap reported to EPA was a metal mesh trap on an Opel vehicle, run on a modified AMA driving schedule with no hard accelerations, hills, or speeds above 45 mph. The trap survived 12,800 miles and at that time had a collection efficiency similar to its zero-mile efficiency of 55 percent.

Regulatory Analysis at 51. Understandably, the EPA has concluded that further research is needed before devices with the appropriate characteristics will be available for use:

Clearly, more basic research still needs to be done in the areas of regeneration initiation and control, and trap durability. Enough progress has been achieved to convince EPA that a successful trap-oxidizer can be developed, but as of this time, no design has proven to have the required collection efficiency over the desired length of time.

Id. at 52.

Nevertheless, the agency concludes that it is merely a question of time before the trap-oxidizer is perfected. "The improvements that are necessary are engineering problems, and are more a function of the resources allocated to the problem than any scientific or technical breakthrough." 45 Fed. Reg. 14,496, 14,498 (1980). Based on the routine nature of most of the remaining problems, the rapid pace of progress in the field since 1978, and the industry's own forecasts of 1985 as a potential completion date, the agency has determined that the lead time remaining is sufficient for application of the requisite technology.

GM dismisses the agency's conclusion as baseless speculation and charges the EPA with naive optimism about the solution of myriad uncertainties, ranging from the development of a durable filter material to the proper location of the trap on the vehicle itself, *see* GM Brief at 28. GM regards the gaps in present knowledge as vitiating the entire standard-setting endeavor:

Until further experimental knowledge on these major development needs is obtained, it is totally impossible to specify when a successful system will be developed for passenger cars and light-duty trucks. Thus, any particulate standard which contemplates use of a regenerative trap-oxidizer must be judged premature and not technologically feasible.

²⁶ Section 202(d)(1) of the Act sets the useful life of light-duty vehicles and their engines at "five years or fifty thousand miles (or the equivalent), whichever first occurs." In determining compliance with the emission standard, the EPA analyzes the exhaust of vehicles that have accumulated 50,000 miles. *See* 45 Fed. Reg. 14,496, 14,506 (1980). The EPA believes, however, that a trap-oxidizer should last at least 100,000 miles. *See* Regulatory Analysis at 51, 45 Fed. Reg. 48,133, 48,137 n.36 (1980).

GM Petition for Reconsideration of Standard at 8 [hereinafter GM Petition]. Thus, GM believes that no standard can be promulgated, regardless of its effective date, on the current record.

Before analyzing GM's technical objections, we must reiterate the standard of review that governs this case. The EPA is not obliged to provide detailed solutions to every engineering problem posed in the perfection of the trap-oxidizer. In the absence of theoretical objections to the technology, the agency need only identify the major steps necessary for development of the device, and give plausible reasons for its belief that the industry will be able to solve those problems in the time remaining. The EPA is not required to rebut all speculation that unspecified factors may hinder "real world" emission control.

The EPA has identified as the necessary remaining steps in development of trap-oxidizer technology the choice of a durable, efficient filter material, the selection of an incineration method, and the refinement of a control mechanism to bring about automatic initiation of the regeneration process. GM agrees with the agency's specification of these aspects of the trap-oxidizer as the ones requiring further research. GM Brief at 22 ("Three critical issues concerning trap oxidizer feasibility remain unresolved: trap durability, regeneration, and collection efficiency.").

a. *Development of a Durable Filter*

The most vigorously controverted issue in this case concerns durability, which the EPA has recognized as the key remaining problem. "Collection efficiencies and regeneration techniques have progressed to the point where the most critical issue is whether the efficiency and regeneration mechanism can be maintained over the useful life of the vehicle." 45 Fed. Reg. 14,496, 14,498 (1980). Both parties focus on the GM Opel test, in which a metal mesh trap survived over 12,000 miles; the EPA views this test as a stirring demonstration of how far research had progressed in the brief springtime of trap-oxidizer research, while GM sees the 12,000-mile mark as insubstantial compared to the 50,000- to 100,000-mile goal.

The EPA has predicted that the necessary work can be accomplished in time for 1985 model year production. The agency points to the wide variety of materials that have demonstrated appropriate initial efficiencies; several of these are hybrids, suggesting that new combinations of present candidates, rather than hitherto untested substances, may provide the answer. The EPA noted the rapid pace of achievement since attention turned to trap-oxidizers:

Considerable progress has occurred in the last 1½ years. Initial after-treatment research concentrated on the use of simple traps and gasoline engine catalytic converters, with basic problems of efficiency and backpressure. In the last 1½ years we have seen marked improvements in efficiency and backpressure, and more importantly, a general consensus that the trap-oxidizer can periodically (and possibly even continually) incinerate the particulate matter. Methods for regeneration initiation and control have been investigated and repetitive incineration has been demonstrated for several trap-oxidizers.

45 Fed. Reg. 14,496, 14,498 (1980). The small number of successful tests reflected the recent focus on trap-oxidizers, not a persistent record of failure: "At this time, EPA has limited trap-oxidizer durability data, as researchers have been reluctant to fund durability testing until other, more basic questions were solved." *Id.* Finally, the manufacturers themselves had projected the possibility of introducing trap-oxidizers in 1985 models. *See* Summary and Analysis of Comments on the Notice of Proposed Rulemaking at 40-41 (1979). The agency fully recognized that no durable, efficient filter material was presently available, but concluded

that, based on current progress and past achievements, there were sufficient grounds for believing that one would be developed in time for the 1985 standard.

We conclude that these are plausible reasons for a determination that the industry is capable of solving the durability problem in the allotted time. The EPA could reasonably refuse to be discouraged by the limited initial success, as the project is relatively young. The rapidity of recent progress is a factor that the agency may consider in making a prediction of future capabilities. See *Society of the Plastics Industry, Inc. v. OSHA*, 509 F.2d 1301, 1309 (2d Cir. 1975), *cert. denied*, 421 U.S. 992 (1975). And the industry's own predictions, while not determinative, support the view that success in this kind of research can realistically be expected within the proposed time frame. We conclude that the EPA's durability prediction, though uncertain, is no more uncertain than such estimates inherently must be, and that the EPA has met the requirement of "reasoned decisionmaking."

* * *

[The court then considers GM's objections regarding the collection efficiency of trap oxidizers and the technology for incinerating trapped particles (regeneration). With respect to the first of these objectives, the court suggests that, as with the durability issue, research on this subject is sufficiently promising to support the EPA rule. Regarding the second objection, the Court notes that GM's own tests show some success in achieving the desired results.]

C. NRDC's Objections to the Particulate Standards

The NRDC, in contrast to GM, thinks that the EPA's standards for diesel particulates are too lax, and attacks a number of the decisions in their regulatory genesis. We find no merit in the NRDC's objections.

The NRDC's first attack is on the regulatory date, relying on the EPA's suggestion that "there is a strong likelihood that trap-oxidizers will be feasible for vehicle application by 1984," Regulatory Analysis at 53. In view of the uncertainty remaining as to whether even the 1985 date is realistic, we defer to the EPA's determination that a 1984 date would leave too little margin for error.

The second objection is to the EPA's consideration of cost in standard setting. The NRDC notes the EPA's estimate that "[e]ven with the particulate regulations, the overall cost of pollution control from diesels should be less than that from gasoline engines." *Id.* at 120-22. The NRDC argues that the carcinogenic character of diesel particulates makes diesel vehicles so dangerous that "appropriate consideration" to cost would require the EPA to discourage purchase of diesels by making them more expensive. Emission standards should be tightened until the cost of compliance by diesels exceeds the cost of compliance by gasoline vehicles. But the correlation between scientific achievement and research investment is not so mechanical that the EPA could set a dollar figure and then compute the level of emission control it would buy. The agency has projected the probable course of future advances in particulate reduction to the best of its ability, assuming a reasonable range of research investment. The statute requires no more.

The NRDC also charges that the EPA "ignored" the risk of cancer posed by particulates. Even a glance at the record refutes the suggestion that the EPA was *unaware* of the risk, or irresponsibly discounted it. A more temperate rephrasing of this claim is that the regulatory approach would have been stricter if the EPA had focused more strongly on the carcinogenic potential of diesel emissions. In this form, the claim becomes another facet of the NRDC's attack on the choice of worst-performing diesel as the measure of technological feasibility.

* * *

The EPA defends its decision to promulgate a single particulate standard applicable to all light-duty diesel vehicles, rather than a number of standards applicable to various classes of diesels. One reason given is the absence of any apparent parameter on which to base such a classification. Another concern is the paradoxical result that graduated standards, by imposing stricter and more costly requirements on low-polluting vehicles, would skew competition in favor of the more loosely regulated, highly polluting models. Finally, Congress itself has taught this method by example, providing unitary emission standards for all passenger vehicles in both the 1970 and 1977 amendments. We conclude that the adoption of a single particulate standard for light-duty diesel vehicles was within the EPA's regulatory discretion.

Even if a single standard is proper, the NRDC asserts, it ought not to be one that *every* diesel can meet. The NRDC cites a favorable passage in *International Harvester*, in which this court agreed with the Administrator that the Act's technological feasibility provisions required only that the standards permit basic auto demand to be met, "even though this might occasion fewer models and a more limited choice of engine types." 478 F.2d at 640. In this case, however, the EPA viewed the legislative history of the 1977 amendments as justifying a more tolerant attitude toward diesel development in the near future. The availability of waivers of the 1.0 gpm oxides of nitrogen standard for "any class or category" of diesel vehicles that requires them, Act § 202(b)(6)(B) (emphasis added), certainly suggests an interest in exploring the full range of potential benefits of diesel technology. We do not hold that the statute mandates such an approach, but it was well within the EPA's regulatory discretion to impose "standards which provide significant particulate reductions, but which do not force any diesel models out of production." Regulatory Analysis at 32.

* * *

V. CONCLUSION

In the Clean Air Act, Congress encouraged the EPA to set standards for the future without specifying the methodology the agency must follow to determine the probable course of future technological growth. In these circumstances, a reviewing court's role is to make sure that the agency has acted responsibly in formulating a reasoned prediction. It is not our task to decide whether the agency is correct, or to require proof to a mathematical certainty. We must be satisfied if the agency has undertaken its analysis with the degree of precision and clarity that the subject inherently permits. The EPA has done so in this case.

We find no merit in the NRDC's allegations that the EPA granted NO_x waivers unlawfully, at undue risk to the public health. We similarly reject the NRDC's challenges to the particulate standards as inconsistent with the statutory mandate. We uphold the EPA's hydrocarbon testing procedure, and accept as sufficiently reasoned the EPA's prediction of technological availability and the particulate standards based thereupon. The regulations reviewed in this proceeding, in their entirety, are

Affirmed.

[The opinion of Judge Robb, concurring in part and dissenting in part, is omitted]

NOTES

1. EPA has set separate standards for light duty trucks under its general authority at § 202(a)(1) to set emission standards for any class or classes of motor vehicles. Note, however, that some light duty trucks qualify as heavy-duty vehicles while others are neither

light-duty or heavy-duty vehicles. See *International Harvester Company v. Ruckelshaus*, 478 F.2d 615 (D.C. Cir. 1973).

2. EPA set particulate standards for light duty vehicles based on what it anticipated could be achieved by the worst-performing vehicle. The court rejects NRDC's challenge to this approach by EPA on the assumption that EPA was required to set standards which reflect the greatest degree of reduction achievable. Note, however, that the court had previously rejected EPA's contention that this standard applied to particulate emissions from light duty vehicles. What was the proper standard against which EPA's particulate standards for light duty vehicles should have been judged? See § 202(a)(1). What is the likelihood that the outcome might have been different if reviewed against this other standard?

3. The technology-forcing aspect of the vehicle emission provisions of the Act, described in the *NRDC* case, is tempered by the reality that the government is unlikely to force the entire automobile industry to shut down, even assuming that the industry was not diligent in developing the technology needed to meet EPA's standard. In striking down EPA's decision not to grant the auto industry a one-year suspension of the 1975 vehicle emission standards, Judge Leventhal recognized this reality:

If in 1974, when model year 1975 cars start to come off the production line, the automobiles of Ford, General Motors and Chrysler cannot meet the 1975 standards and do not qualify for certification, the Administrator of EPA has the theoretical authority, under the Clean Air Act, to shut down the auto industry, as was clearly recognized in Congressional debate. We cannot put blinders on the facts before us so as to omit awareness of the reality that this authority would undoubtedly never be exercised, in light of the fact that approximately 1 out of every 7 jobs in this country is dependent on the production of the automobile. Senator Muskie, the principal sponsor of the bill, stated quite clearly in the debate on the Act that he envisioned the Congress acting if an auto industry shutdown were in sight.

International Harvester Company v. Ruckelshaus, 478 F.2d at 636.

4. On January 24, 1984, the EPA extended for two years the deadline for meeting the light-duty vehicle, diesel engine particulate standard of 0.20 grams per mile. 49 Fed. Reg. 3010 (1984). The decision was based, in part, on a "Trap Oxidizer Feasibility Study" completed by EPA in March, 1982. That study showed that significant progress had indeed been made on trap oxidizer technology and that all of the technical problems had been more or less resolved. EPA nonetheless determined that additional lead time was necessary to develop a prototype or working model of an entire trap-oxidizer system, and to develop production and testing facilities for the system. 49 Fed. Reg. at 3010-11. Trap-oxidizers remain an important regulatory requirement for control of particulate matter from vehicle engines. See e.g., 40 C.F.R. §§ 86.090-25(b)(4)(i)(F); (b)(4)(ii)(D); (b)(4)(iii)(D); (b)(6)(i)(F); 86.094-25(b)(4)(iii)(D); (b)(4)(iv)(D); (b)(6)(i)(G) (1996).

5. The 1977 Amendments introduced the idea of waivers from meeting the CO and NO_x standards otherwise applicable under the law. The purpose behind these waivers was to "reflect Congress' concern that pollution control standards tailored to the virtues and vices of the traditional gasoline engine might stifle the development of innovative alternative technologies." *NRDC v. EPA*, 655 F.2d at 340. The 1990 Amendments removed the waiver for carbon monoxides and limited the NO_x waiver to vehicles with "innovative power train technolog[ies]." The prior law had included a separate NO_x waiver for diesel engines.

NATURAL RESOURCES DEFENSE COUNCIL V. REILLY
983 F.2d 259 (D.C. Cir. 1993)

HARRY T. EDWARDS, Circuit Judge:

The 1990 amendments to the Clean Air Act (“CAA”) altered section 202(a)(6) to require the Environmental Protection Agency (“EPA”), after “consultation” with the Department of Transportation (“DOT”), to promulgate standards by November 15, 1991, that would require new “light-duty” vehicles to be equipped with on-board refueling vapor recovery (“ORVR”) systems over a specified phase-in period. After consulting with DOT, EPA concluded that the safety risks of ORVR systems were unreasonable given the availability of alternative mechanisms for controlling refueling vapor emissions and declined to promulgate ORVR standards by the statutory deadline. This decision was Noticed as a Final Agency Action in April, 1992. 57 Fed. Reg. 13,046 (1992). In explaining its decision, EPA contended that amended section 202(a)(6) contained residual authority for EPA to exercise discretion in deciding whether to promulgate ORVR standards if the Agency determined that ORVR was unreasonably unsafe. The Natural Resources Defense Council (“NRDC”) initiated this suit, alleging that EPA lacked discretion under the statute and that its failure to promulgate ORVR standards was therefore unlawful.

Because the language of section 202(a)(6) plainly imposes a mandatory duty, we agree that EPA’s decision not to promulgate ORVR standards was beyond the pale of its statutory authority. There is nothing in the statute to substantiate EPA’s claim for residual discretionary authority, nor is there ambiguity that would warrant deference by this court to EPA’s construction. Furthermore, EPA’s findings regarding ORVR safety do not establish that all such systems present inherent and unreasonable safety risks. We are thus not faced with a situation in which a literal reading of the section produces nonsensical results. Whatever doubts EPA may have about the wisdom of choices implicit in the statute must be raised with Congress. This court is not the proper forum in which to argue the relative merits of those choices. Therefore, the Final Agency Action is set aside and EPA is ordered to promulgate ORVR standards in compliance with the CAA.

I. BACKGROUND

A. The “Refueling Vapor Recovery” Problem

During the normal operation of gasoline fueled vehicles, hydrocarbon vapors build up in the fuel tank. When the fill cap is removed during refueling, most of these vapors are forced out of the tank and into the environment by the influx of liquid gasoline. This release of vapors poses significant health and environmental hazards. Of primary concern is the effect these vapors have on the production of ozone, which is formed when hydrocarbons and nitrogen oxides react in sunlight. Excessive ozone pollution is a persistent environmental hazard in major metropolitan areas. See *Air Quality Designations and Classifications*, 56 Fed. Reg. 56,694 (1991) (designating nonattainment areas for ozone pollution). In addition, escaping gasoline vapors contain known carcinogens. Thus, the control and containment of these vapors has been an environmental concern for many years.

Two basic approaches have emerged for controlling the emission of hydrocarbon vapors during refueling: “Stage II” controls and ORVR systems. Stage II controls—typically a rubber boot on the fuel nozzle that creates a tight seal with the fuel filler spout so that escaping vapors are recaptured and funneled to underground tanks—are relatively simple mechanisms that have been used since 1976 in many counties in California as well as certain cities in the

United States. See *DOT, Assessment of the Safety of Onboard Refueling Vapor Recovery Systems* at 3 (July 1991) [hereinafter "DOT Assessment"]. Under the current CAA, Stage II controls are required in most nonattainment areas of moderate or worse severity. See §§ 182(b)(3), (c), (d), (e).

ORVR systems, on the other hand, are more sophisticated and have not yet been used in production vehicles. As the name implies, onboard refueling vapor recovery systems are built into the vehicle itself to contain the vapors before they reach the fuel filler spout. There are presently two types of technology that have been seriously considered for operational ORVR systems. The first is the ORVR "canister," which collects vapors as they are forced through a regulating orifice and stores them in a charcoal-filled canister. See DOT Assessment at 1. As the engine operates, ambient air is drawn through the canister to purge the hydrocarbons from the charcoal and meter the vapors back into the engine for combustion ("purging"). See *id.* Canister systems are more fully evolved than other ORVR systems because virtually all of the necessary technology for canister systems is currently available. Indeed, most passenger cars on the road today already carry a small charcoal filled canister (so called "evaporative canisters") to collect the relatively modest quantities of vapor that accumulate in fuel tanks during operations other than refueling. It was, in fact, modified versions of current evaporative canisters that the National Highway Transportation Safety Administration ("NHTSA") studied in order to provide EPA with DOT's recommendations regarding the safety of ORVR. *Id.* at 2.

An alternative to ORVR canisters is the flexible fuel bladder, which contracts as gasoline is burned, retarding the evaporation of liquid fuel and thus the accumulation of hydrocarbon vapors. Because of potential safety benefits from such a system, aside from the environmental protection it would provide, the possibility of using flexible fuel bladders has been explored for many years. Nonetheless, no bladder prototypes were available at the time NHTSA conducted its study. See *DOT, Review of Comments Submitted to EPA on NHTSA's Report "An Assessment of the Safety of Onboard Refueling Vapor Recovery Systems"* at 4 (Nov. 27, 1991) [hereinafter "DOT Review"].

B. Legislative and Regulatory Responses to the "Refueling Vapor Recovery" Problem

Under the 1977 amendments to the CAA, EPA was required to promulgate ORVR regulations if it found ORVR to be a feasible and desirable means of controlling vapor emissions during refueling. Pub. L. No. 95-95, § 216, 91 Stat. 760-61 (1977). Upon review of the information available to it in the late 1970's, EPA initially concluded that ORVR was "technically feasible." See 52 Fed. Reg. at 31,163 (describing conclusions reached in 1980). However, in order to avoid placing additional regulatory burdens on the ailing American automotive industry, EPA decided not to require ORVR systems at that time. See 46 Fed. Reg. 21,628, 21,629 (1981).

In 1984, EPA again took up the ORVR issue in a draft study entitled "*Evaluation of Air Pollution Strategies for Gasoline Marketing Industry*," EPA-450/3-84-012a (July 1984). See 49 Fed. Reg. 31,706, 31,707 (1984) (announcing the public availability of the study). After thorough reconsideration, EPA concluded that ORVR was the preferred control technology and proceeded to detail proposed regulations for the implementation of mandatory ORVR. 52 Fed. Reg. at 31,162. In that same Federal Register Notice, EPA addressed the technical difficulties associated with a practical ORVR system. EPA concluded that ORVR was generally safe and that approximately two years of lead time would be sufficient for manufacturers to install ORVR in new models since most of the technology was already available. 52 Fed. Reg. at 31,202-03.

Researchers at NHTSA had a somewhat different view of the situation, for they had continuing concerns that ORVR would lead to an increase in crash and non-crash vehicle fires. *See* 57 Fed. Reg. 13,220 (1992). Thus, before promulgating a final rule, EPA initiated further dialogue with NHTSA in order to address these issues.

NHTSA's concerns stemmed primarily from its view that ORVR would increase the complexity of fuel systems and concomitantly the risk of fire. EPA specifically responded to this concern in its 1988 draft report on the safety of ORVR. First, EPA challenged NHTSA's underlying assumption that there is a positive correlation between increased complexity and increased risk. EPA noted that the increasing design complexity of automobiles without significant safety degradation "strongly suggests that onboard systems of various design complexities could also be implemented safely." *EPA Draft "Summary & Analysis of Comments Regarding Potential Safety Implications of Onboard Vapor Recovery Systems"* at 3-35 (Aug. 1988) [hereinafter "EPA Draft"]. Second, even assuming that added complexity means added safety risk, EPA determined that ORVR systems need not be overly complex. According to the draft report, ORVR canister systems could be devised that would be simple extensions of present evaporative systems. *See id.* at 3-40. Thus, EPA found that "straightforward, reliable, and relatively inexpensive engineering solutions exist for each of the potential problems identified." *Id.*

In order to test this conclusion, EPA constructed a simple ORVR canister system and installed it in a test vehicle. *Id.* at 5-6. This vehicle adequately performed under limited testing conditions, leading EPA to summarize the experiment as follows:

Onboard systems can be simple extensions or modifications of present evaporative systems. Further, modifications that are necessary can even simplify certain aspects of the current design. With the proper design, no risk need be added, and in fact, refueling controls can offer several safety benefits.

Id. at 5-7. To further assess the safety of proposed ORVR systems, EPA contracted with an outside firm to complete an independent study. In September, 1988, after reviewing the risk of vehicle fire for ten different fuel system designs, the Battelle Institute's Transportation Safety Group concluded that the risk of fire was remote in all cases and that it would not be significantly impacted by the installation of ORVR. *See* EPA, Refueling Emission Controls: A Briefing for the National Highway Transportation Safety Administration at 25 (Apr. 21, 1989) [hereinafter "EPA Briefing"].

* * *

In 1990, Congress again amended the CAA, this time establishing a comprehensive framework for controlling refueling emissions. Under sections 182(b)(3), (c), (d), and (e), Stage II controls are required in moderate, serious, severe, and extreme nonattainment areas. Amended section 202(a)(6) of the CAA now mandates that EPA, after consultation with DOT regarding safety, shall promulgate standards for ORVR by November 15, 1991. Pursuant to this statutory mandate, EPA reinitiated consultation with DOT, through NHTSA. NHTSA then embarked upon a further review of ORVR canister safety. Since actual ORVR systems were proprietary and not available for independent testing, NHTSA used components of, and data pertaining to, current evaporative systems to reach its conclusions. DOT Assessment at 11. NHTSA acknowledged that, because of availability problems, it did not consider or evaluate ORVR systems other than canisters. *See* DOT Review at 4.

NHTSA's final report was submitted to EPA in July, 1991. The report identified potential failure points of an ORVR canister system during operation. DOT Assessment at 7-8. However, this analysis was premised on four critical and unproven assumptions about ORVR

canister systems. First, since ORVR systems will store more vapors than existing evaporative canisters, NHTSA hypothesized that the fire hazard posed by larger ORVR canisters would be greater than that of existing canisters. *Id.* at 3. Second, NHTSA speculated that the quantity of vapors being moved through the system during refueling will be large compared to that which passes through current evaporative systems. *Id.* at 9. Third, NHTSA assumed that the complexity of the ORVR canister system will be greater than present systems, thus increasing the possibility of component failure. *Id.* Finally, NHTSA contended that the increased quantity of fuel vapor being carried in the vehicle at any given time will lead to a greater chance of fire in the event of a crash in which canister integrity is lost and the contents of the canister are exposed to an ignition source. *Id.* Based on these assumptions, NHTSA concluded that:

Under certain conditions representative of the motor vehicle crash and operating environment, ORVR refueling vapor recovery systems would result in a substantial increase in fire potential. These occurrences result in an increased safety risk and hence would have a negative impact on safety. *Id.* at 10. Although NHTSA maintained that the testing conditions it used simulated real world environments, it recognized that the occurrence of these conditions would be unlikely. *Id.* at 11.

After publication of the study, EPA requested public comment on NHTSA's findings and conclusions. See 56 Fed. Reg. 43,682-83 (1991). In late September, a public hearing on the matter was held in which both EPA and NHTSA officials participated. See 57 Fed. Reg. at 13,221. EPA then asked NHTSA to review the presentations made at the hearing and to respond to public comments. NHTSA's technical evaluation, which followed on November 27, concluded:

On this issue, the record is clear and unambiguous. Implementation of ORVR, regardless of prototype development and technological evolution, will increase safety risks. ORVR systems will require additional components and must manage, store, and transport larger quantities of flammable fuel vapor. . . . Thus, further technology development and operational successes or failures of prototype vehicles will not eliminate the fundamental safety issues associated with ORVR systems.

....

NHTSA considers these risks to be inherent. We [NHTSA] believe that no amount of product development or engineering and quality control measures would fully alleviate these risks, regardless of lead time.

DOT Review at 4-5.

While this evaluation process was being completed, the November 15, 1991 deadline for the promulgation of ORVR standards passed without EPA action. Alleging that EPA had failed to abide by the statutory mandate in section 202(a)(6), NRDC filed suit in the Eastern District of Virginia under section 304(a) of the CAA. See *Natural Resources Defense Council v. Reilly*, 788 F.Supp. 268 (E.D.Va.1992). Before the case could be concluded, however, EPA issued a Notice of Final Agency Action in which it determined that the safety risks of onboard systems outweighed the environmental benefits of such devices and that it would not, therefore, promulgate standards pursuant to section 202(a)(6). See 57 Fed. Reg. at 13,220-31. Noting that section 307(b)(1) of the CAA confers exclusive jurisdiction on the United States Court of Appeals for the District of Columbia Circuit to review Final Agency Action, the district court dismissed the case without prejudice. *NRDC v. Reilly*, 788 F.Supp. at 273-74. That decision has been appealed to the Fourth Circuit, which is holding the case in abeyance pending the outcome in this case. *NRDC v. Reilly*, No. 92-1534 (4th Cir. 1992).

II. DISCUSSION

The principal dispute in this case involves EPA's interpretation of section 202(a)(6) of the CAA. NRDC contends that the section contains an unambiguous requirement that EPA promulgate standards for ORVR systems. EPA, on the other hand, sees the "consultation" requirement contained in section 202(a)(6) as the last vestige of discretion permitted the Agency. In particular, the Agency argues that Congress did not intend that EPA promulgate ORVR standards if it found the systems to be inherently and unreasonably unsafe.

Since EPA is charged with administering the CAA, NRDC's challenge to its construction of this provision must be reviewed using the analysis provided by the Supreme Court in *Chevron USA, Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837 (1984). If, under the first prong of [the] *Chevron* analysis, we can determine congressional intent by using "traditional tools of statutory construction," then that interpretation must be given effect. [*NLRB v. United Food & Commercial Workers*, 484 U.S. [112] at 123 (1987)]. If, on the other hand, "the statute is silent or ambiguous with respect to the specific issue," then we will defer to a "permissible" agency construction of the statute. *Chevron*, 467 U.S. at 843.

* * *

Given the plain and unmistakable language of section 202(a)(6), we need not proceed beyond the first step of the *Chevron* analysis. Section 202(a)(6) mandates that "within one year after November 15, 1990, the Administrator *shall* . . . promulgate standards under this section requiring that new light duty vehicles . . . shall be equipped with [ORVR] systems." (emphasis added). In this case, the language of the relevant section most manifestly obligates EPA to promulgate standards for ORVR systems.

* * *

Recognizing that its only hope of prevailing in this case is to reach the deferential second step of *Chevron*, EPA posits two facets of the legislation as evidence of ambiguity. However, neither argument undermines the congressional intention plainly evinced by the "shall promulgate" mandate of section 202(a)(6).

A. The Consultation Requirement

First, EPA argues that although section 202(a)(6) imposes a mandatory duty, the scope of that duty is circumscribed by the requirement that EPA consult with DOT regarding ORVR safety. EPA argues that the section does not specify how the consultation requirement "meshes" with the duty to promulgate standards, thus making the section at least ambiguous. We reject this argument because it is premised on a reading of "consultation" that would effectively result in DOT having a "veto" over any EPA action in compliance with the statutory duty to promulgate ORVR standards. This is a specious construction of the statute.

* * *

B. The Lapse of Stage II Requirements

EPA also argues that section 202(a)(6)'s provision for the lapse of Stage II requirements when EPA promulgates ORVR standards creates an ambiguity that warrants deference to the Agency's interpretation of the statute under the second step of *Chevron*. Specifically, section 202(a)(6) reads in pertinent part:

The requirements of section 182(3) of this title (relating to stage II gasoline vapor recovery) for areas classified under section 182 of this title as moderate for ozone shall not apply after promulgation of such standards and the administrator may, by rule, revise or waive the application of the requirements of section 182(b)(3) of this

title for areas classified under section 182 of this title as Serious, Severe, or Extreme for ozone, as appropriate, after such time as the Administrator determines that onboard emissions control systems required under this paragraph are in widespread use throughout the motor vehicle fleet.

The effective date of the Stage II requirements under section 182(b)(3) of the Act is November 15, 1992, one year after the date by which EPA was obligated to promulgate ORVR standards. EPA concludes from this that Congress provided for an alternative pollution control system in the event that EPA determined that ORVR is unsafe.

However, this reasoning relies on a specious reading of the statutory language. Section 202(a)(6) expressly provides for the termination of Stage II requirements after ORVR standards are promulgated, not if they are promulgated—the implication clearly being that ORVR standards will, at some future time, be promulgated and that Stage II will become unnecessary in certain nonattainment areas at that time. The Stage II requirements, then, are not so much an alternative to ORVR as they are an interim measure to provide environmental protection in the event that ORVR standards are inexplicably delayed.

This “fall-back” approach does not run afoul of any of our standard canons of interpretation. To begin with, there is no direct conflict between the two related sections of the CAA. If ORVR standards had been promulgated on time, the Stage II requirements in moderate nonattainment areas would merely have been superfluous. On the other hand, if EPA missed the statutory deadline—as it in fact has—some vapor emission control would be provided. Although perhaps not the most elegant framework, it was not unreasonable for Congress to provide for contingent environmental protection in the event that EPA missed the statutory deadline, given EPA’s record with regard to implementing the CAA. *See NRDC v. Thomas*, 805 F.2d at 416 (EPA “behind the statutory timetable” of the CAA); *Sierra Club v. California*, 658 F.Supp. 165, 175 (N.D. Cal. 1987) (EPA had “long-standing unwillingness to comply with” the CAA). * * *

It was suggested at oral argument that requiring EPA to promulgate ORVR standards at this point in time, now that the deadline has passed and Stage II controls have become mandatory in moderate and worse non-attainment areas, would impose inefficient double-controls in many areas. Yet, this is not precisely correct, since overlapping Stage II and ORVR controls will not result in complete duplication. As EPA explained in its Final Action, the benefits provided by ORVR are small at first and increase as fleet turnover occurs. 57 Fed. Reg. at 13,225. Even by the most optimistic view, it will be well into the twenty-first century before a substantial portion of the automobile fleet will be equipped with ORVR fuel systems. *See id.* (at least ten years until ORVR becomes an effective control). Stage II controls will provide important environmental protection in the areas with the worst ozone accumulation while this turnover takes place. In addition, by the terms of the statute, ORVR standards will only apply to light-duty vehicles. Whatever investment has already been made in Stage II controls for moderate nonattainment areas that would have been unnecessary had EPA promulgated ORVR standards on time will benefit the environment by capturing vapor emissions from heavy trucks, motorcycles, and other vehicles not encompassed within the ORVR standards. Thus, a literal reading of the statute does not lead to patently incoherent results. In any event, to the extent that double-control will occur now that the statutory deadline has passed, that contingency was so obvious that it must have been contemplated and accepted by Congress. It is not within the province of this court to second guess such clear legislative policy choices.

III. CONCLUSION

The text of section 202(a)(6) clearly manifests a congressional intent that EPA promulgate ORVR standards. The requirement that EPA consult with DOT prior to promulgating the standards does not derogate from that mandatory duty. In addition, the provisions in the CAA for Stage II controls provide for an interim solution to the problem of ozone accumulation until ORVR systems become commonplace. ORVR and Stage II controls are not two alternative approaches between which EPA has discretion to choose. Moreover, even if we were to allow that Congress did not intend for EPA to require ORVR systems if EPA found that ORVR presented inherent and unreasonable safety risks, the record would not support such a finding. At most, it appears that EPA performed a net weighing of the risks and benefits of ORVR canisters relative to Stage II controls. In the end, EPA concluded that it preferred Stage II controls. However, that is not the equivalent of a finding that all ORVR systems present inherent and unreasonable safety risks. Thus, EPA's final decision must be set aside and ORVR standards promulgated in compliance with the CAA.

So Ordered.

AMERICAN AUTOMOBILE MANUFACTURERS ASSOCIATION V. CAHILL

973 F. Supp. 288 (N.D.N.Y. 1997)

KAHN, District Judge.

* * *

Plaintiffs, the American Automobile Manufacturers Association ("AAMA") and the Association of International Automobile Manufacturers, Inc. ("AIAM") have brought this action under 42 U.S.C. § 1983 and 42 U.S.C. § 7604 [§ 304]. AAMA and AIMA (collectively, the "manufacturers") seek declaratory and injunctive relief against the defendants John P. Cahill, the Acting Commissioner of the New York Department of Environmental Conservation (the "Commissioner") and Dennis C. Vacco, the Attorney General of the State of New York (the "Attorney General"). The plaintiffs seek to enjoin the defendants from enforcing legislation which requires the sale of "zero emissions vehicles" ("ZEVs") commencing in the 1998 model year.

* * *

I. BACKGROUND

* * *

A. The Clean Air Act

"The original Clean Air Act, passed by Congress in 1955, was aimed primarily at increasing federal research and assistance in air pollution prevention." [*Motor Vehicle Manufacturers Ass'n v. New York Dep't of Env't'l Conservation*, 17 F.3d 521 (2d Cir. 1994)] *MVMA III*, 17 F.3d at 524. "It made no provision for federal motor vehicle emission standards." *Id.* Since several individual states, had begun to adopt motor vehicle emissions standards, Congress decided it would be prudent to establish a national standard to avoid "chaos insofar as manufacturers, dealers, and users are concerned." *Id.* Federal standards were passed in 1965 and in 1967 and states were preempted from developing their own motor vehicle emission standards. *Id.* at 525. However, an exception from preemption was made for

California due to what was characterized as “unique problems and pioneering efforts” in the area of motor vehicle emissions. *Id.*

In 1970, sweeping revisions were made to the Act and national ambient air quality standards (“NAAQS”) were created. NAAQS were established for carbon monoxide, ozone, lead, nitrogen dioxide, sulfur dioxide and particulates. *See* 40 C.F.R. Part 50. The Act also “required even more stringent uniform emission standards for new motor vehicles.” *Id.* In the continuing effort to reduce nationwide air pollution and to aid states in meeting NAAQS, in 1977, Congress saw fit to allow individual states to “‘piggy back’ onto California’s [automotive emissions] standards, if the state’s standards ‘are identical to the California standards for which a waiver has been granted for such model year.’” MVMA III, 17 F.3d at 525. While eager to reduce air pollution, Congress still held the “desire not to burden manufacturers unduly with myriad state emissions regulations.” *Id.* at 531. As a result, in order for an individual state to utilize the more stringent automotive emissions standards, “California must adopt its standards two years in advance of such year, California must receive a waiver for its standards, and the adopting state must adopt California standards at least two years before the model year.” *Id.* at 525 (citations omitted).

The Act was amended once again in 1990. * * * The preemption of state regulation of new automobiles survived the 1990 amendments. *Id.* As before, California enjoys the only exception to the preemptive effect of the Act but must still seek approval from the EPA in order to obtain a waiver. *Id.* at 527. “The effect of the Clean Air Act is that motor vehicles manufactured for sale in the United States must be either ‘federal cars’—certified to meet federal vehicle emission standards as set by the EPA—or ‘California cars’—certified to meet that state’s standards.” *Id.* at 526-27.

“Many states, including New York, are in danger of not meeting increasingly stringent federal air pollution limits.” *Id.* In order to ensure enforcement, Congress has directed that the EPA impose mandatory sanctions on states that fail to meet NAAQS. § 179. As discussed earlier, the “piggy-back” provision of § 177 was designed to provide states with another tool in their efforts to meet the NAAQS. “This opt-in authority . . . is carefully circumscribed to avoid placing an undue burden on the automobile manufacturing industry.” *Id.* In order to take advantage of § 177, “(1) an opt-in state must adopt standards that are identical to California’s; (2) California must receive a waiver from the EPA for the standards; and (3) both California and the opt-in state must adopt the standards at least two years before the beginning of the automobile model year to which they apply.” *Id.* In 1990, Congress added two more restrictions to the opt-in requirements. “First, Congress added new language providing that § 177 shall not be construed as authorizing an opt-in state to limit the sale of California-certified vehicles.” *Id.* at 527-28. “Second, it forbade opt-in states from taking any action that has the effect of creating a car different from those produced to meet either federal or California emission standards, a so called ‘third vehicle.’” *Id.*

B. California’s Emission Regulations

The California Air Resources Board (“CARB”) is the entity responsible for emissions regulations for the State of California. In order to achieve the California legislature’s goal of a 55 percent reduction in organic emissions by the year 2000, CARB established two programs, one being a low-emission vehicle program (“LEV”) and the other a clean fuels (“CF”) program which became effective in 1991. *Id.* at 528. While both of these programs were the subject of the prior actions before this Court and the Second Circuit, the present case involves only the LEV program.

CARB's LEV program divides the covered motor vehicles into four classes: "(1) Transitional Low-Emission Vehicles ('TLEVs'), (2) Low Emission Vehicles ('LEVs'), (3) Ultra Low Emission Vehicles ('ULEVs'), [and] (4) Zero-Emission Vehicles ('ZEVs')." *Id.* (citing Cal. Code Regs. Title 13 § 1960.1(g)(2)). Each category is progressively more strict in standards for non-methane organic ("NMOG") emissions, and a ZEV, produces no emissions directly from the vehicle.

A manufacturer has the option of selling automobiles from each category but must meet an NMOG "fleet average" for the vehicles sold during a given model year. Each year the standards become more stringent. *Id.* In addition, manufacturers can meet the required fleet average standard through a credit system which allows manufacturers to earn additional credit for selling more LEVs than required to meet the fleet average. *Id.* "Credits [may] be banked internally to offset future short-falls or sold to other manufacturers unable to meet their fleet average." *Id.*

While manufacturers have flexibility in deciding upon a mix of the four categories of vehicles they wish to sell under the California plan, the only limitation on that flexibility is the ZEV sales percentage requirement. Under the 1991 CARB regulations, beginning in the model year 1998, "2 percent of all vehicles certified for sale in California must be ZEVs, with the rate increasing to 5 percent in 2001 and to ten percent in 2003." *Id.* The ZEV requirement also has a credit system that works in the same way as the credit system for fleet average discussed above which allows manufacturers to accumulate credits and buy or sell credits with other manufacturers. *Id.* In March of 1996, California abandoned its ZEV sales mandate for the years 1998 to 2002. CARB replaced the sales mandate with individual Memorandums of Agreement ("MOAs") with the seven largest manufacturers. The MOAs are binding agreements with the manufacturers which fall outside of the realm of the Act and require specific numbers of ZEVs to be sold during the model years 1998 through 2002. Substantial penalties will be levied against manufacturers that fail to meet the requirements under the MOAs.

C. The Present Action

On April 28, 1992, the New York State Department of Environmental Conservation ("DEC") adopted the New York Low Emissions Vehicle Program, 6 N.Y.C.R.R. Part 218, which spurred the earlier litigation between the present parties discussed earlier. The New York ZEV legislation is essentially identical to the California emissions standards which were adopted by CARB in 1991.

The specific section of the Low Emission Vehicle Program at issue in this case is the "Zero Emission Vehicle Sales Mandate" (the "ZEV regulations" or "ZEV sales mandate") codified at 6 N.Y.C.R.R. § 218-4.1. Specifically, the ZEV regulations provide: "Commencing in model year 1998, each manufacturer's sales fleet of passenger cars and light-duty trucks from 0-3750 lbs. [] shall, at minimum, contain the following percentage of ZEV's. . . ." *Id.* The statute further sets forth that for the model years 1998 through 2000, ZEV sales must comprise 2% of the new vehicle sales in New York. *Id.* The percent requirement is based upon the number of sales and leases during the model year 1998. As an approximation, the covered manufacturers sold or leased approximately 390,000 vehicles in New York during the model year 1996. Therefore, taking 2% of that figure, the manufacturers would be required to sell approximately 7,800 ZEVs during the model year 1998. The percentage rises to 5% during the 2001-2002 model years and up to 10% from 2003 and beyond.

Also within the New York regulations is the marketable credit system discussed earlier which enables manufacturers to accumulate and purchase or sell ZEV credits. 6 N.Y.C.R.R.

§ 218-4.2(a) and (e). “Manufacturers which sell fewer ZEVs than required, in New York State, in a given model-year shall make up the deficit by the end of the next model-year, by selling an additional number of ZEVs in New York State, equal to their deficit. . . .” 6 N.Y.C.R.R. § 218-4.2(b). Manufacturers who fail to meet the New York ZEV requirement for a given model year can carry over the deficit forward to the following year without penalty. A deficit can be made up during the next year through increased production or the purchase of credits.

Plaintiffs allege a total of six causes of action. First, the manufacturers contend that New York State’s ZEV regulations are preempted by § 209(a) of the Clean Air Act. Second, the plaintiffs assert that New York’s ZEV regulations are not identical to the California emission standards for the same model year and are therefore in violation of § 177 of the Act. Third, AAMA and AIMA allege that the ZEV regulations are preempted by § 249 of the Act. The fourth count claims that New York’s ZEV regulations are subject to implied preemption because they stand as an obstacle to the objectives of Congress when § 177 was enacted. In the fifth claim brought under 42 U.S.C. § 1983, the plaintiffs contend that New York’s regulations violate the Due Process Clause of the Fourteenth Amendment. Finally, the manufacturers allege that the ZEV regulations violate the Commerce Clause of Article I, Section 8 of the United States Constitution.

Both the plaintiffs and defendants have moved for summary judgment. * * *

II. DISCUSSION

* * *

B. Summary Judgment

1. Preemption of ZEV Mandate by §§ 209(a) and 177

Counts one and two of the complaint challenge New York’s ZEV requirement by arguing that the mandate conflicts with §§ 209 and 177 of the Act. “The familiar rules of statutory construction look first to the ‘language of the statute itself because, when looking at its language, a court should presume that the statute says what it means.’” 17 F.3d at 531. “In the usual case, where the language of the statute is clear, that is the end of the analysis.” *Id.* “Even when the meaning of language seems apparent, it must be remembered that we are attempting to ascertain Congress’ purpose; where ambiguity resides in a statute, legislative history and other tools of interpretation may be employed to determine legislative purpose more perfectly.” *Id.*

Section 209(a) clearly illustrates that Congress saw fit to prevent individual States from imposing their own emission standards on new motor vehicles. * * * Section 209(a) provides:

No State or any political subdivision thereof shall adopt or attempt to *enforce any standard relating to the control of emissions from new motor vehicles* or new motor vehicle engines subject to this part. No State shall require certification, inspection, or any other approval relating to the control of emissions from any new motor vehicle or new motor vehicle engine as condition precedent to the initial retail sale, titling (if any), or registration of such motor vehicle, motor vehicle engine, or equipment.

(Emphasis added).

The manufacturers set forth several arguments in support of preemption. Many of these arguments attack the validity of the ZEV mandate itself, an issue that has been decided in the prior litigation. As a preliminary argument, the manufacturers contend that in the prior litigation, the State argued that the ZEV mandate is in fact a “standard relating to the control of emissions” and therefore cannot take the opposite stance during this action under the

doctrine of judicial estoppel. Second, the plaintiffs maintain that Congress' intention was to have broad preemption. Third, the plaintiffs assert that the EPA has not determined if the ZEV sales mandate is a "standard relating to the control of emissions." Fourth, the manufacturers argue that an enforcement mechanism can be a "standard relating to the control of emissions." Fifth, the manufacturers contend that § 209(a) preempts state mechanisms to enforce standards. Finally, the plaintiffs assert that the language in § 209(a) referring to the prohibition of State certification and inspection of new vehicles prohibits the ZEV mandate. Defendants contend simply that the ZEV requirement is not a "standard relating to the control of emissions from new motor vehicles" and is therefore not preempted under § 209(a) or § 177.

[The court first rejects plaintiffs estoppel claim.]

* * *

b. Emission Standard vs. Enforcement Mechanism

As discussed earlier, § 177 provides:

Notwithstanding section § 209(a) of this title, any State which has plan provisions approved under this part may adopt and enforce for any model year standards relating to control of emissions from new motor vehicles or new motor vehicle engines and take such other actions as are referred to in section 209(a) of this title respecting such vehicles if—

- (1) such standards are identical to the California standards for which a waiver has been granted for such model year, and
- (2) California and such State adopt such standards at least two years before commencement of such model year (as determined by regulations of the Administrator).

There is no question that there is an inherent distinction between an emission standard and an enforcement mechanism. While § 177 clearly sets forth that individual States may not create their own emission standards and must comply with either the Federal or California standards, the Second Circuit has held that the Act does not place this restriction on States in regards to enforcement of those emission standards. In addressing the potential enforcement of the New York Low Emissions Vehicle Program in the prior litigation, the Second Circuit clearly distinguished between emission standards and enforcement mechanisms:

Although the 'piggyback' provision requires states to adopt standards identical to those in place in California to avoid preemption, there is no such identity requirement for the mechanism employed to enforce those standards. Although the Clean Air Act requires an 'enhanced' inspection and maintenance program to reduce vehicle emissions, . . . there is no requirement that the cutpoints and other features of the program match those in California. Moreover, from a practical standpoint, it is understandable that Congress did not limit states in this way—enforcement techniques will necessarily vary from state to state.

[*Motor Vehicle Manufacturers Ass'n v. New York Dep't of Env't'l Conservation*, 79 F.3d 1298 (2d Cir. 1996)] *MVMA V*, 79 F.3d at 1305, *see also Motor and Equip. Mfrs. Ass'n v. Environmental Protection Agency (MEMA)*, 627 F.2d 1095, 1112 (D.C. Cir. 1979). Therefore, in order to determine whether New York's ZEV mandate is preempted by the Act, this Court is obligated to determine if the ZEV requirement is a "standard relating to the control of emissions" or if it is an "enforcement procedure." Of course, if the ZEV mandate is an "emissions standard," it is preempted by the Act because New York's standards would have to be identical to California's standards, and California has abandoned its ZEV mandate for the

model years 1998 through 2002. On the other hand, if the ZEV mandate is an “enforcement procedure,” it is not preempted by the Act.

Unfortunately, the regulations do not provide definitions of the terms “emissions standard” or “enforcement procedure.” Furthermore, the specific question of whether or not the ZEV sales mandate is a “standard relating to the control of emissions from new motor vehicles” has not been addressed by the Second Circuit. In fact, as noted earlier, in *MVMA III* the Second Circuit chose not to address that very issue.

All parties cite the decision of *MEMA* as supporting their interpretation of the term “standard.” In *MEMA*, the Court was analyzing § 209 in the context of “in-use maintenance regulations” and determined that the term “standard” refers to “quantitative levels of emissions” rather than methods of enforcing standards. 627 F.2d at 1112. “The Senate Report on the Air Quality Act of 1967, discussing the preemption provision, mentions ‘standards’ for hydrocarbons, nitrogen oxides, and carbon monoxide in obvious reference to the numerical limitations on those pollutants.” *Id.*

Furthermore, the Court noted that the “Administrator [of the EPA] has consistently made a distinction between standards and accompanying enforcement procedures, confining the former to regulations on quantitative levels of emissions.” *Id.* at 1113. The Court further made reference to a Supreme Court decision which, in “construing the word ‘standards’ in another section of the Clean Air Act, [it defined the word] as ‘a quantitative level’ to be attained by the use of ‘techniques,’ ‘controls,’ and ‘technology.’” *Id.*

The D.C. Circuit was also careful to note the intentional distinction on the part of Congress between “standards” and “enforcement procedures” in subsection (b) of § 209. *Id.* at 1113.

The only species of emissions control regulations which directly addresses air quality is the standard. . . . An enforcement procedure, by contrast, does not directly relate to air quality. . . . Of course, the absence or ineffectiveness of an enforcement program might endanger the ability of the standards to accomplish the levels of emissions they seek, and thus an indirect relationship exists between enforcement procedures and the public health and welfare. Yet, the relationship turns on the impact of the enforcement procedures on the effectiveness of the standards.

Id.

Turning to the issue of the ZEV sales mandate, the Court holds that the mandate is an “enforcement procedure” and is not an “emission standard” under §§ 209 and 177. The ZEV sales mandate does not specifically set forth numerical limitations on pollutants and its primary function is to force the development of ZEV technology. At its heart, the sales mandate forces manufacturers to sell a specified percentage of ZEVs in relation to the sale of its conventional vehicles. If the manufacturers do not wish to supply ZEVs, they can choose to limit the sale of conventional vehicles in New York State, purchase ZEV credits from other manufacturers, or settle their deficit financially with the State. However unappealing these options may be to the manufacturers, it does not alter the fact that the ZEV sales mandate does not specifically limit the emissions of new motor vehicles. The Second Circuit has clearly stated that the ZEV sales mandate itself does not violate the Act. *MVMA III*, 17 F.3d at 536-37. It further noted that the “ZEV sales mandate was obviously included by California [and New York] in the LEV plan to encourage the development, production, sale and use of ZEVs.” *Id.* at 536. “The Act is concededly a technology forcing’ law.” *Id.*

The plaintiffs are correct in their assertion that the EPA has not decided the issue of whether or not the ZEV sales mandate is in fact a standard or enforcement mechanism. While the EPA hesitated to adopt a view that defined emission standards as only being levels of specific pollutants, it also did not offer to expand the definition and concluded that “it need not reach a decision on this issue at this time.” 59 Fed. Reg. at 48,692. The EPA further stated that “section 177 should *not* be read to require that once a state has promulgated one California standard for a particular model, the state should adopt all of California’s standards relating to the control of emissions from all types of motor vehicles for that model year.” *Id.* (emphasis added). Rather, “the state need not adopt other standards that are not integral to the particular program being adopted” and states may adopt an LEV program and omit a ZEV sales mandate if they so choose. *Id.* In other words, the EPA encourages flexibility and states may select portions of programs which they feel accomplish their goals, yet leave out less appealing pieces. This is also consistent with the Second Circuit’s holding that New York was not bound to adopt California’s Clean Fuel program when it chose to adopt the LEV program. *MVMA V*, 79 F.3d at 1307.

While it is clear that the EPA firmly stands for the proposition that states must adopt emission standards that are identical to California, it is equally clear that states do not have to adopt California standards in their entirety and that the EPA has not decided if the ZEV sales mandate is in fact a standard. Furthermore, while it may be true that the definition of emission standard should be broader and include more than just specific pollutants, this is clearly uncharted territory and the Court is of the opinion that including the ZEV sales mandate would broaden the definition of “emissions standard” too far. The most important goal of the ZEV sales mandate is to encourage the manufacturers to develop zero emissions technology in the form of electric vehicles or other variations of propulsion technology. The ZEV sales mandate will undoubtedly effect the sum of emissions from motor vehicles over time. However, these effects are indirect in nature and long-term in effect and will admittedly have less of an impact in the early stages of the mandate. For this reason, the mandate itself is not an emissions standard, but rather a long term strategy.

In conclusion, the Court holds that the ZEV sales mandate does not rise to the level of a “standard relating to the control of emissions” under the Act. As a result, the ZEV sales mandate does not run afoul of § 209. Furthermore, because it is not a standard, the ZEV sales mandate is not required to be identical to the California standards and therefore does not conflict with the first subsection of § 177. Therefore, defendants are entitled to summary judgment on counts one and two.

2. Implied Preemption of the ZEV Mandate

The manufacturers assert that the Act impliedly preempts the Commissioner’s regulations because the ZEV sales mandate conflicts with the Congressional objectives behind the Act. Plaintiffs argue that New York’s regulations stand alone among the fifty states and one of Congress’ main goals in passing the Act was to avoid requiring manufacturers to build different vehicles to accommodate varying state regulations. Defendants contend that the ZEV sales mandate is not impliedly preempted because it is not an emission standard and is therefore not covered by § 177 or § 209 of the Act. Defendants further argue that since the ZEVs to be sold in New York are already California-certified vehicles, manufacturers will not have to create a separate ZEV for the State.

Even where Congress has not expressed an intent to pre-empt the entire field of regulation, a particular state rule will be pre-empted when it is impossible to comply with both state and federal law, or where the state law stands as an obstacle to the accomplishment of the

full purposes and objectives of Congress.” *Toy Manufacturers of America v. Blumenthal*, 986 F.2d 615, 623 (2d Cir. 1993). “It is true that where a preemption provision provides a ‘reliable indicium of congressional intent’ a court is required to restrict its preemption analysis to the terms of that clause.” *Id.* “However, a finding of implied preemption (which enlarges the field of preemption beyond what is covered by an express provision) is not automatically foreclosed by the existence of a preemption clause. . . .” *Id.* “*Cipollone* specifically requires courts to determine first that the express preemption provision provides ‘a reliable indicium of congressional intent with respect to state authority’ before it may reject implied preemption arguments.” *Id.* at 623- 24 (citing *Cipollone v. Liggett Group, Inc.*, 505 U.S. 504 (1992)).

The plaintiffs argue, and the Court agrees, that the express preemption clause in the Act does not foreclose the possibility of implied preemption. While it is true that § 209(a) prohibited states other than California from adopting their own emission standards, Congress also saw fit to allow other states to model their standards after California in adopting § 177.

Ultimately, however, the plaintiffs’ implied preemption argument fails. First, as discussed earlier, New York’s ZEV sales mandate is not an emission standard. Rather, the mandate requires manufacturers to sell a specified percentage of ZEVs in relation to the number of traditional vehicles sold. Manufacturers have the options to produce the required number of ZEVs, limit the sales of traditional vehicles, purchase ZEV credits from other manufacturers, or purchase ZEV credits from the State. Thus, the ZEV sales mandate does not create a different emissions standard that would overburden the manufacturers.

Second, Congress’ primary concern was to avoid forcing manufacturers to build as many as 51 different vehicles to accommodate differing emission standards from state to state. * * * In other words, Congress was more concerned with States enforcing the California numeric emission standards differently thus requiring the manufacturers to meet the numeric standards for individual states by building “third vehicles.” Since ZEVs are uniformly “zero emissions,” this Congressional concern is not an issue.

Congress does not address the manufacturers’ concern of building electric vehicles that may need to be modified for variations in climate. However, Congress seems to be aware of the fact that variations in the manufacturing of conventional vehicles does not raise “third vehicle” concerns: “So-called ‘running changes’ are made in the emissions equipment placed on vehicles in production ‘without any changes being made in the vehicles’ existing emissions certificate. . . . Thus, physical differences in emissions equipment under a single certificate are even now being made by the auto manufacturers without anyone having contended that this creates a ‘third vehicle.’” *Id.*

Furthermore, while overburdening the manufacturers is one concern of Congress, on the other side of the scale is Congress’ desire to enable individual states to address poor air quality. In adopting § 177, Congress noted that § 209(a) “now interferes with legitimate police powers of States, prevents effective protection of public health, limits economic growth and employment opportunities in nonattainment areas for automotive pollutants, and unduly stifles enforcement of present federal emission standards.” H.R. Rep. No. 253, 95th Cong., 1st Sess., at 2776. Thus, balancing the scale between overburdening manufacturers and enabling individual states to address air quality is at the very heart of the Act.

Because the ZEVs to be sold in New York are California-certified cars, the manufacturers are under no obligation to create a “third-vehicle.” Rather, their only obligation is to have the California-certified ZEVs available for sale in New York. The plaintiffs argue that the present ZEV technology is not viable in the colder climate of New York State. Regardless of the

validity of that argument, the fact remains that New York State is not requiring different ZEVs than those sold in California. Thus, there is no conflict with the Act, express or implied. * * *

III. CONCLUSION

While the technology-forcing regulations presented here will no doubt be the subject of future debate and litigation, there can be no question that they are at least a method of achieving the salutary goals of the Clean Air Act. There is also no question that there may be hardships occasioned by their implementation. However, these hardships are unquestionably acknowledged and overborne by Congress' intent that the quality of the air we breath should continue to improve and benefit from all available technological advances. [Summary judgment for the defendants or a motion to dismiss granted on all counts.]

NOTES

1. At the present time, the only ZEV commercially available is a battery operated car. The California Air Resources Board (CARB) had decided to repeal the ZEV mandate for the model years 1998-2002 because of concerns regarding battery technology, including poor performance, limited range, and high price. CARB had concluded that these problems would soon be rectified with the introduction of new battery technologies, and it did not want to jeopardize public sentiment about ZEVs by promoting the sale of cars plagued with serious problems. Importantly, California did not change its 10% ZEV requirement for vehicles produced in model year 2003. It simply abandoned the interim requirements for earlier model years. See *American Automobile Manufacturers Ass'n v. Cahill*, 973 F. Supp. 288, at n.10 (N.D.N.Y. 1997). Given the New York's relatively cold climate, which could further exacerbate performance problems with these vehicles, why was New York insisting that these interim ZEV goals be met?

2. Recent advances in fuel cell technology suggest that fuel cell vehicles may soon become the vehicle of choice for both LEVs and, even ZEVs. Fuels cells use hydrogen to produce electricity that can be used to power a vehicle. While fuel cells emit virtually no pollutants, hydrogen is not readily available to fuel such vehicles. Chrysler has developed a prototype vehicle that uses an on-board processor to convert conventional gasoline to hydrogen, carbon dioxide, and water. The fuel cells can then use the hydrogen produced to run the vehicle. See Michelle Krebs, *Electric Powered Car in On the Drawing Board*, N. Y. TIMES, Feb. 28, 1997; John Eaton, *Fuel Cell Closer to Reality?*, DENV. POST, Jan. 11, 1998.

3. On January 7, 1998, the EPA promulgated regulations establishing a voluntary National Low Emission Vehicle (NLEV) program. The Northeastern States which comprise the Ozone Transport Commission, were given 45 days to opt-in to the program. All of the affected States chose to opt-in by the February 21 deadline. By opting in, the States effectively relinquished their authority to adopt the strict California emission standards until at least model year 2004, or perhaps until model year 2006, if EPA fails to adopt tough new national emission standards by December 15, 2000. After the affected States opted-in, the automakers were given 15 days to decide whether they wanted to opt-in, which they did. The agreement commits automakers to produce and distribute low emission vehicles to the Northeastern States by model year 1999, and to the rest of the country by the 2001 model year, but allows them

to avoid having to meet California standards anywhere outside California. *See* 63 Fed. Reg. 926; 11,374 (1998).

4. Information about Title II programs is available on the Internet from EPA's Office of Mobile Sources. [Http://www.epa.gov/OMSWWW](http://www.epa.gov/OMSWWW).

CENTER FOR AUTO SAFETY V. RUCKELSHAUS

747 F.2d 1 (D.C. Cir. 1984)

SCALIA, Circuit Judge:

Section 207 of the Clean Air Act, 42 U.S.C. § 7541 (1982) provides that if the Administrator of the Environmental Protection Agency ("EPA") determines that a substantial number of any class or category of vehicles or engines fail during their statutorily defined useful life to conform to the regulations establishing maximum emission levels, the Administrator shall require the manufacturer to submit a plan for remedying the nonconformity at the manufacturer's expense. The EPA has hitherto implemented this provision by requiring and approving plans that commit the manufacturer to recall and repair the nonconforming vehicles or engines. This case presents the question whether the EPA may implement it instead by approving a plan that commits the manufacturer to "offset" the excessive pollution emitted from nonconforming vehicles or engines by meeting lower than currently permitted emission standards for vehicles or engines to be built in future model years.

I

Until 1970, the EPA enforced motor vehicle pollution restrictions exclusively by testing engine prototypes for compliance with emission standards. *Cf.* S. Rep. No. 1196, 91st Cong., 2d Sess. 29 (1970). The experience of the 1960s showed that many vehicles in actual use emitted pollutants at levels far in excess of the tested prototypes and that the discrepancy grew as the vehicles' mileage increased. *Id.* at 29-30. Proponents of stricter clean air requirements concluded it was essential to "require that new cars meet not only the standards on the production line but also the standards in performance. Unless they do, the whole exercise is useless. . . ." 116 Cong. Rec. 33,093 (1970) (statement of Sen. Muskie). The Clean Air Act Amendments of 1970 addressed this problem by adding § 207, which requires the manufacturer to warrant continuing compliance with emission standards during the vehicle's or engine's useful life, directs the EPA to test for such compliance (if technologically feasible), and provides for the remedying of noncompliance as described above.

As part of its in-use surveillance program, the EPA tested 1979 General Motors ("GM") cars with GM engine family 920S2E. All ten test vehicles exceeded the NO_x emission standard of 2.0 grams per mile, for reasons which neither the EPA nor GM was able to determine. In December 1980, the EPA ordered GM to submit a plan for remedying the nonconformity. In February 1981 GM submitted a proposed remedial plan that called for recall and repair of the nonconforming vehicles. After some discussions with the EPA, GM submitted in May 1981 an alternate plan covering both the 920S2E engine family and the similar 920S4 family which also showed a 100 percent noncompliance rate for NO_x. (The latter was under consideration for a noncompliance order by the EPA, though no formal determination of noncompliance had yet been made.) The new plan proposed not recalling and repairing the nonconforming 1979

vehicles but engineering 1982 and 1983 engine families to meet a target lower than mandatory NO_x standards. The lower emissions from the 1982-83 vehicles would offset the excessive emissions from the 1979 vehicles. GM asserted that this plan would achieve environmental NO_x benefits at least equal to the gain that could theoretically be achieved by a recall if all owners brought in their 1979 vehicles for repair, and far greater than what could realistically be expected given the large number of owners who would in fact not do so. GM claimed that the offset plan would save the company \$11.8 million and would save 1979 vehicle owners \$25.8 million in fuel costs, since the repair remedy originally proposed would have caused increased fuel consumption.

After negotiations with the EPA, GM submitted a final revised offset plan on July 2, 1982. The EPA accepted it on July 29, and published a Federal Register notice of this decision on August 30. 47 Fed. Reg. 38,189 (1982). On September 3, 1982 the Center for Auto Safety and others petitioned this court for review of the EPA's decision under 42 U.S.C. § 7607(b)(1)(1982).

II

Petitioners challenge the EPA's action as unlawful on the ground that the offset plan does not remedy the nonconformity of the 1979 vehicles within the meaning of Section 207(c). Nothing but recall and repair of the nonconforming vehicles themselves, they say, is an acceptable remedy under the statute.

As in every case involving statutory construction, "our starting point must be the language employed by Congress." *Reiter v. Sonotone Corp.*, 442 U.S. 330, 337 (1979). Section 207(c) provides in relevant part as follows:

Effective with respect to vehicles and engines manufactured during model years beginning more than 60 days after December 31, 1970—

(1) If the Administrator determines that a substantial number of any class or category of vehicles or engines, although properly maintained and used, do not conform to the regulations prescribed under section 7521 of this title, when in actual use throughout their useful life (as determined under section 7521(d) of this title), he shall immediately notify the manufacturer thereof of such nonconformity, and he shall require the manufacturer to submit a plan for remedying the nonconformity of the vehicles or engines with respect to which such notification is given. The plan shall provide that the nonconformity of any such vehicles or engines which are properly used and maintained will be remedied at the expense of the manufacturer. If the manufacturer disagrees with such determination of nonconformity and so advises the Administrator, the Administrator shall afford the manufacturer and other interested persons an opportunity to present their views and evidence in support thereof at a public hearing. Unless, as a result of such hearing the Administrator withdraws such determination of nonconformity, he shall, within 60 days after the completion of such hearing, order the manufacturer to provide prompt notification of such nonconformity in accordance with paragraph (2).

(2) Any notification required by paragraph (1) with respect to any class or category of vehicles or engines shall be given to dealers, ultimate purchasers, and subsequent purchasers (if known) in such manner and containing such information as the Administrator may by regulations require.

§ 207(c) (1982). Respondents Ruckelshaus and EPA, as well as Intervenor GM, argue that the variants of the word "remedy" in this provision should be understood in what they assert is the word's "common law" sense, denoting the means by which a right is enforced or the violation

of a right is prevented, redressed or compensated. At common law, they argue, substitutionary relief such as compensation is a basic principle of remedies; and absent evidence of a contrary intent, statutory terms with well defined common law content should be given that meaning.

It seems to us that this argument overlooks the basic principle that, in statutes as elsewhere, a word cannot be construed in isolation from its context. If the common-law meaning that a word has acquired is a specialized one, and if the context of the statute is not the context for which that specialized meaning has been assigned, it would distort rather than effectuate legislative intent to disregard ordinary usage. That is the case here. The “substitutionary” connotation of the term “remedy” for which respondents argue is a specialized one. (When speaking of remedying the problem of international terrorism, for example, one would hardly have in mind the provision of adequate monetary compensation for its victims.) And the common-law context of the specialized meaning is judicial relief for private injury. Since the present statute involves executive rather than judicial action, and is addressed to public needs rather than private entitlements, we think the specialized meaning utterly inapt. Absent evidence of contrary intent, the words in the statute must be presumed to bear their normal meaning of eliminating, rather than merely providing compensation for the effects of, the condition that is to be “remedied.” Here that means eliminating the nonconformity of the GM vehicles or engines.

Far from contradicting this ordinary meaning, both the surrounding text of the statute and its legislative history tend to confirm it. Paragraph 207(c)(2) requires that notification of nonconformity be provided by the manufacturer to dealers, ultimate purchasers, and (if known) subsequent purchasers. This expensive procedure is categorically required in all cases—yet it would serve no purpose whatever in those cases (if they existed) where offset was to be the relief. There is no point in notifying owners of a nonconformity that will be “remedied” by making changes in a future model. GM evidently realizes this, so its plan did not envision compliance with the notification procedures. How those statutory requirements could simply be ignored has not been explained.

As for the legislative history: The Senate bill that eventually became the Clean Air Act Amendments of 1970, S. 4358, 91st Cong., 2d Sess. (1970), contained a provision substantially the same as what is before us, requiring the manufacturer to “remedy [the] nonconformity.” S. 4358, § 207(e)(3). The Senate Committee reporting the bill described this provision as one imposing an obligation “to recall that model or class for the purpose of correcting any nonconformity.” S. Rep. No. 1196, *supra*, at 29. In the floor debate, Senator McIntyre described the bill as “authorizing the Secretary of Health, Education, and Welfare to have cars road tested and recall those produced if they do not meet standards.”

It is true, as GM forcefully argues in its brief, that all of the statements we have just cited purport to describe merely what the Administrator *may* require and not what he *must* require. But the point is (as GM might more readily appreciate if it were contesting the Administrator’s imposition of a “substitutionary” remedy when it would prefer recall) there is *nothing* to suggest that he *may* impose offset. The mere fact that he has discretion in imposing the only remedy discussed that is authorized by the statute in no way implies that he has discretion to impose other remedies as well. Neither GM nor the EPA has been able to refer us to a single passage in the legislative history indicating that Congress had in mind any remedy other than recall when it enacted § 207(c).

GM and EPA argue that in construing statutes courts must accord deference to the interpretation given by the implementing agency. That is true, but the degree of deference is not uniform. A high degree is appropriate, for example, when the agency’s expertise can help in assessing the effects of competing interpretations upon the policies of the statute (and hence assessing the interpretation which a wise Congress should be presumed to have intended). *See*,

e.g., *NLRB v. Hearst Publications, Inc.*, 322 U.S. 111, 130-31 (1944). That is not the case here; the difference between both the nature and the consequences of recall on the one hand and offset on the other is readily apparent to the uninitiated. A high degree of deference is also called for when the text to be interpreted is a statutory provision that directs an agency to apply “a standard of such inherent imprecision (‘closely related to banking’) that a discretion of almost legislative scope was necessarily contemplated.” *Association of Data Processing Service Organizations, Inc. v. Board of Governors of the Federal Reserve System*, 745 F.2d 677, 697 (D.C. Cir. 1984). Such a standard is not at issue here. Finally, the degree of deference is also high when the agency presses upon us an administrative construction that is both “contemporaneous” with the statute’s enactment (presumably because that is unlikely to have been either informed or coerced by the enacting legislature’s genuine intent) and “longstanding” (presumably because, as a matter of stable government, even a minor error regarding the enacting legislature’s genuine intent acquires a certain prescriptive right if not corrected by subsequent legislatures). See *Consumer Product Safety Commission v. GTE Sylvania, Inc.*, 447 U.S. 102, 120 (1980). Neither of those conditions is present here. From 1970 until this case, the EPA consistently required recall as the remedy for nonconformity under § 207(c). See 47 Fed. Reg. 38,189 (1982). The regulations issued to implement the section continue to be entitled “Recall Regulations,” 40 C.F.R. §§ 85.1801-85.1807 (1983), and nowhere suggest that any remedy other than recall might be appropriate. Recall has been assumed to be the exclusive remedy even in litigation before this court involving EPA implementation of § 207(c). See *Chrysler Corp. v. EPA*, 631 F.2d 865, 886-87 (D.C. Cir.), cert. denied, 449 U.S. 1021 (1980).

The degree of deference appropriate here, therefore, is modest—no more than that thoughtful respect we should give to the views of the officers of another branch who have been officially presented with the issue and who, like us, have taken an oath to apply the law that Congress enacted. That is not enough to overcome what seems to us the clarity of the statutory analysis set forth above.

We conclude, therefore, that § 207(c) requires recall and repair as the only statutory remedy for nonconformity. Since that is so, the EPA acted unlawfully in proceeding under § 207(c) to accept GM’s offset plan as a remedy for the nonconformity—just as it would have acted unlawfully to require it. We emphasize that this is the only issue presented and decided. Specifically, we do not consider the agency’s ability to take account of an offset commitment in the exercise of its enforcement discretion, should it decide in a particular case that such a course is “best calculated to achieve the ends contemplated by Congress and to allocate its available funds and personnel in such a way as to execute its policy efficiently and economically.” *Moog Industries, Inc. v. FTC*, 355 U.S. 411, 413 (1958). See *Oil, Chemical and Atomic Workers International Union v. Occupational Safety and Health Review Commission*, 671 F.2d 643, 650 (D.C. Cir. 1982), cert. denied sub nom. *American Cyanamid Co. v. Oil, Chemical and Atomic Workers International Union*, 459 U.S. 905 (1982); *State Water Control Board v. Train*, 559 F.2d 921, 927-28 (4th Cir. 1977); *Terminal Freight Handling Co. v. Solien*, 444 F.2d 699, 709 (8th Cir. 1971), cert. denied, 405 U.S. 996 (1972). That is not what has occurred here, but rather a misinterpretation of the statute which would permit systematic substitution of offsets for recalls. That may well be a more effective means of reducing automotive air pollution; but it was not the means envisioned by the Clean Air Act.

The agency’s approval of the GM plan, being not in accordance with law, 5 U.S.C. § 706(2)(A) (1982), is set aside. In light of this disposition, we need not consider the petitioners’ motion to complete the record.

Petition granted.

NOTES

1. The court employs a broad standard of review in striking down EPA's approval of the GM offset plan, according only "modest" deference to the agency choice. Why? Is the scope of review used here consistent with that required by § 307(d)(9)? See also § 307(d)(1)(L). Compare the scope of review used in the *Center for Auto Safety* case with that articulated by the U.S. Supreme Court in *Chevron USA, Inc. v. NRDC*, 467 U.S. 837 (1984), *supra* at Chapter 9. Are the standards consistent? Recall Timothy Dyk's criticism of the *Chevron* decision. On what basis might he support the *Center for Auto Safety* decision?

2. From a policy perspective, was the offset plan truly preferable to the recall which the court determined to be required by law?

3. In February, 1981, GM had submitted a plan which provided for a recall to remedy the nonconforming vehicles. Subsequently, in May, 1981, after discussions with EPA, GM proposed the offset. What does this suggest about effecting change through the administrative process?

4. The test methods and procedures used to determine compliance with the vehicle emission standards are established by regulations. 40 C.F.R. part 85, Subparts V & W. Those regulations were sustained against a legal challenge by a vehicle manufacturer's organization. *Motor Vehicle Manufacturer's Association v. Ruckelshaus*, 719 F.2d 1159 (D.C. Cir. 1983).

5. Conformity with emissions standards is judged on a vehicle-by-vehicle basis, and not by the average performance of the vehicle population as a whole. Enforcement action is not required, however, in every case where an individual nonconformity is shown. EPA General Counsel's Opinion 76-4.

6. Before the 1990 amendments, vehicle manufacturers were required to warrant to any new or used vehicle purchaser, that the vehicle would conform to federal emissions standards throughout its useful life. As a result of the 1990 Amendments, beginning with the 1995 model year, vehicle manufacturers must warrant the emissions from their vehicles only for a warranty period of two years or 24,000 miles. *Id.* For "specified major emission control components", however, which includes catalytic converters, electronic emissions control units, and onboard emissions diagnostic devices, the warranty period is eight years or 80,000 miles. § 207(i).

7. One problem engendered by the performance warranty provisions of the Act was that vehicle manufacturers were allowed to condition their warranties on the vehicle owner's use of repair parts that were sold and installed by the vehicle manufacturers. In 1977 Congress acted to restore the competitive posture of independent manufacturers of repair parts by establishing a self-certification program, whereby independent manufacturers could certify that their parts would not cause violations of the emission standards. § 207(a)(2). No vehicle manufacturer could deny a warranty claim so long as the vehicle owner used certified parts. Regulations implementing the self-certification program were remanded in part in *Specialty Equipment Marketing Association v. Ruckelshaus*, 720 F.2d 124 (D.C. Cir. 1983). See also *Automotive Parts Rebuilders Association v. EPA*, 720 F.2d 142 (D.C. Cir. 1983) wherein the court considered the validity of regulations which set out the warranty obligations of the vehicle manufacturer where certified and uncertified parts are used to repair automobiles subject to warranty.

8. *High Altitude Provisions.* Due to thin air and a resulting less complete combustion, vehicles in high altitude areas tend to emit greater quantities of CO and HC than the same vehicles at lower altitudes. To accommodate this difference, Congress enacted several provisions in the 1977 Amendments which allowed manufacturers to achieve lower emission reductions in higher altitudes than in lower altitudes. See § 202(f). These provisions are of largely historical significance at least as regards light duty vehicles. Technological advances coupled with statutory deadlines have combined to result in identical standards for both high and low altitude light duty vehicles for the years 1984 and beyond. Light duty trucks will have to meet the same standards regardless of altitude beginning with the 1995 model year. § 206(f). 48 Fed. Reg. 7392 (1983); 48 Fed. Reg. 48,598 (1983); 40 C.F.R. 86.087-8(g)(1986). Under these regulations light duty vehicles “must be capable of *automatically* controlling emissions to the appropriate levels at both low and high altitudes.” 48 Fed. Reg. 7393 (1983). Certain limited exceptions apply. EPA estimated that the cost of compliance with these standards would be \$13-16 per vehicle. *Id.* at 7392.

9. *Aircraft emissions.* Section 231 of the Act authorizes the EPA to promulgate regulations to issue emission standards for pollutants from aircraft engines which “may reasonably be anticipated to endanger public health or welfare.” Unlike other motor vehicle standards, EPA is authorized to regulate emissions from existing as well as new aircraft engines. Any standards promulgated by the EPA under this section may be vetoed by the President upon a finding by the Secretary of Transportation that any such regulation would create a hazard to aircraft safety. The emission regulations are enforced by the Secretary of Transportation through an existing program that requires aircraft to obtain a certificate from the Department of Transportation. § 232(a). Such certificates may be suspended or revoked for noncompliance with emission standards. *Id.* Regulations establishing emission standards for aircraft engines were promulgated by EPA in 1982. 40 C.F.R. part 87 (1997). For existing aircraft the regulations are limited to emissions of smoke. 40 C.F.R. § 87.31 (1997). Certain existing gas turbine engines are also prohibited from discharging fuel venting emissions. 40 C.F.R. § 87.11. New aircraft engines must meet hydrocarbon standards as well as smoke emission standards. 40 C.F.R. § 87.11. EPA chose not to regulate CO and NO_x emissions because they were found not to contribute significantly to ambient air quality violations. See 47 Fed. Reg. 58,462 (1982).

10. Based on information gathered in 1982-83, EPA ordered the Dynamic Motors Corporation to recall all of its 1979 subcompacts to remedy a nonconformity. The order is issued in 1984 but recall cannot be accomplished until 1985, which is past the useful life of the 1979 vehicles as defined by the statute. Does DMC have to remedy the nonconformity of automobiles which are beyond their useful life? See *General Motors Corp. v. Ruckelshaus*, 724 F.2d 979 (D.C. Cir. 1983).

B. Regulation of Fuels and Fuel Additives

ETHYL CORPORATION V. EPA

51 F.3d 1053 (D.C. Cir. 1995)

HARRY T. EDWARDS, Chief Judge:

At issue in this case is a claim that the Administrator of the Environmental Protection Agency ("EPA" or "Agency") has impermissibly construed a provision of the Clean Air Act ("Act") governing the regulation of fuel additives. Title II of the Act, 42 U.S.C. §§ 7521-7590 (1988 & Supp. V 1993), establishes a comprehensive scheme for regulating motor vehicle emission and fuel standards for the prevention and control of air pollution. Section 211(f)(1) prohibits the introduction into commerce of new fuels or fuel additives which are not "substantially similar" to existing fuels and fuel additives. A manufacturer may, however, under section 211(f)(4), apply to the Administrator of the EPA for a waiver of the section 211(f) prohibition if the manufacturer can show that the fuel additive "will not cause or contribute to a failure of any emission control device or system . . . to achieve compliance by the vehicle with the emission standards." In this case, Ethyl Corporation ("Ethyl") attempted to secure a waiver for a fuel additive under section 211(f)(4), and the Administrator denied the waiver request for reasons other than those specified in the applicable statutory provision.

Beginning in 1990, Ethyl filed its first of four section 211(f)(4) waiver applications with the Agency for a fuel additive, methylcyclopentadienyl manganese tricarbonyl ("MMT"), designed to prevent auto-engine knocking. The Agency denied the first three applications on the grounds that Ethyl failed to satisfy the emissions criterion; the manufacturer had not shown that MMT "will not cause or contribute to a failure of any emission control device or system . . . to achieve compliance . . . with the emission standards." In response to Ethyl's fourth application, which is the subject of this litigation, the Administrator decided that Ethyl's tests satisfied the emissions criteria. *Fuels & Fuel Additives; Waiver Decision/Circuit Court Remand*, 59 Fed. Reg. 42,227, 42,259 (1994) (*"Waiver Decision"*). However, rather than granting the waiver, the Administrator decided that she had discretion under the Act to "consider other factors in determining whether granting a waiver is in the public interest and consistent with the objectives of the Clean Air Act," including the effects of MMT on public health. *Id.* The Administrator then determined that Ethyl had failed to satisfy the Agency's public health concerns, concluding that there was a "reasonable basis for concern about the effects on public health that could result if EPA were to approve use of MMT in unleaded gasoline." *Id.* at 42,260. On that basis, the Administrator denied Ethyl's application for a waiver. *Id.* at 42,261. Ethyl petitioned this court for review of the Administrator's decision and we now grant its petition.

We hold that the Administrator violated the clear terms of section 211(f)(4) in denying Ethyl a waiver for MMT on public health grounds. The language of section 211(f)(4) is clear, directing the Administrator to consider only emission effects, not public health effects, in waiver determinations. Because Congress instructed the EPA to evaluate only the effect on emissions in waiver determinations, and because Ethyl has met the statutory criteria, we hold that the Administrator of the EPA exceeded her authority in denying Ethyl's request for a waiver for MMT. Accordingly, we vacate the Agency's *Waiver Decision* and order the EPA to grant Ethyl a waiver for its fuel additive.

I. BACKGROUND

A. *The Statutory and Regulatory Regime*

In enacting section 211 of the Clean Air Act, Congress adopted a preventative approach to the regulation of fuels, banning fuels and fuel additives which were not “substantially similar” to existing products. Section 211(a) authorizes the Administrator to prohibit the sale of fuels and fuel additives unless they have been registered with the Administrator under section 211(b). Before registering a fuel additive under section 211(b)(2)(A), (B), the Administrator may require the manufacturer “to conduct tests to determine potential public health effects of such fuel or additive” and to furnish information regarding the fuel additive’s effect on “the emission control performance of any vehicle . . . or the extent to which such emissions affect the public health or welfare.” Under section 211(c)(1)(A), (B), the Administrator may “control or prohibit” the manufacture or sale of any fuel additive, if she determines that “any emission product of such . . . fuel additive causes, or contributes, to air pollution which may reasonably be anticipated to endanger the public health or welfare” or “impair to a significant degree the performance of any emission control device or system which is in general use.”

Section 211(f)(1)(A) prohibits the introduction into commerce of new fuel additives, stating that “it shall be unlawful for any manufacturer of any fuel or fuel additive to first introduce into commerce” a fuel additive for general use “which is not substantially similar” to those additives already in use. Under that section, however, the Administrator may grant a waiver if the manufacturer demonstrates that the fuel additive will not cause or contribute to a failure of any emission system which ensures compliance with the emission standards. *See id.* § 211(f)(4). That provision states:

The Administrator, upon application of any manufacturer of any fuel or fuel additive, may waive the prohibitions established under paragraph (1) or (3) of this subsection or the limitation specified in paragraph (2) of this subsection, if he determines that the applicant has established that such fuel or fuel additive or a specified concentration thereof, and the emission products of such fuel or additive or specified concentration thereof, will not cause or contribute to a failure of any emission control device or system (over the useful life of any vehicle in which such device or system is used) to achieve compliance by the vehicle with the emission standards with respect to which it has been certified pursuant to section 206 of this title.

Id. The provision gives the Administrator 180 days from the receipt of such application to act before “the waiver . . . shall be treated as granted.” *Id.*

In 1978, the EPA issued guidelines describing the specific requirements for a waiver under section 211(f)(4). *Guidelines for Fuel Additive Waivers*, 43 Fed. Reg. 11,258 (1978); *Guidelines for Section 211(f) Waivers for Alcohol-Gasoline Blends*, 43 Fed. Reg. 24,131 (1978). Those guidelines explain that “[a] request for a waiver should contain data relating to a fuel additive’s emissions effects which are derived from vehicle testing,” and describe the testing procedures indicative of effects on emissions. 43 Fed. Reg. at 11,259. The guidelines do not mention a public health criterion or any testing procedures for determining public health effects. Before the waiver decision at issue in this case, the Agency had considered twenty-three applications for waivers under section 211(f)(4), and it never previously relied on public health effects in denying a waiver. *See Waiver Decision* at 42,232, 42, 234.

B. The Waiver Proceedings

The fuel additive, methylcyclopentadienyl manganese tricarbonyl or MMT, commercially labeled by Ethyl as HiTEC 3000, is to be blended in unleaded gasoline. MMT increases octane when it is added to gasoline to prevent auto-engine knocking. Because Ethyl's additive is less expensive than other octane enhancers, EPA assumed that if a waiver was granted, MMT would likely be used in a large proportion of this country's gasoline. See *Fuels & Fuel Additives; Waiver Application*, 57 Fed. Reg. 2535, 2536, 2547 n.58 (1992) ("1992 Waiver Decision"). In the past, MMT was used in leaded gasoline in the United States and in unleaded gasoline in Canada. *Id.* at 2536. MMT's principal component is manganese, which has been the subject of a number of health-related studies, the results of which reveal a debate in the scientific community regarding its potential health hazards. See *Waiver Decision* at 42,239-55.

Before the proceedings culminating in this action, Ethyl sought and had been denied waivers for MMT use in unleaded fuel on several occasions. Ethyl submitted its first waiver application on March 17, 1978. In denying the waiver application, EPA found that the use of MMT causes or contributes to the failure of vehicles to meet emissions standards. *In re Applications for MMT Waiver*, 43 Fed. Reg. 41,424, 41,424-25 (1978). Specifically, the EPA determined that, at the concentration level proposed by Ethyl, MMT had "a statistically significant adverse HC [hydrocarbon] emissions effect." *Id.* at 41,427. On May 26, 1981, Ethyl submitted its second waiver application. Once again, the Administrator denied the application, finding that Ethyl failed to demonstrate that the requested level of MMT in unleaded gasoline would not cause or contribute to the failure of vehicles to comply with emission standards. 46 Fed. Reg. 58,360, 58,360 (1981). In 1988, Ethyl began a series of discussions with EPA staff to formulate a program to develop the necessary data for a waiver.

On May 9, 1990, Ethyl submitted its third application for use of MMT in unleaded gasoline. Near the end of the 180-day period for a decision, the EPA encouraged Ethyl to withdraw its application in order to address two concerns. First, the EPA had generated some data at an Ann Arbor, Michigan test facility that contradicted Ethyl's data; Ethyl subsequently demonstrated that contaminated fuel caused the Ann Arbor test results. Second, the EPA was interested in the possible health implications of manganese emissions associated with MMT. On November 1, 1990, Ethyl withdrew its application, and on July 12, 1991, Ethyl reapplied for a waiver. In support of its application, in EPA's words, Ethyl provided "the most extensive test program ever conducted by a waiver applicant." *1992 Waiver Decision* at 2538. However, the Administrator denied Ethyl's application again on the ground that Ethyl failed to establish that MMT will not cause or contribute to the failure of a significant number of vehicles to achieve emissions standards. *Id.* at 2541. In support of its decision, the EPA cited data presented by Ford Motor Company ("Ford") showing that "MMT-induced HC [hydrocarbon] emissions increases are potentially far greater than those reported by Ethyl." *Id.* at 2543. While the Administrator mentioned some concerns about the adverse public health effects of an increase in airborne manganese (as well as possible atmospheric problems associated with MMT), the Agency "chose[] not to base its decision, in whole or part, on this issue." *Id.* at 2547.

In February of that year, Ethyl filed a petition for review of the Administrator's 1992 Waiver Decision with this court, but subsequently entered into settlement discussions with EPA. Ethyl provided EPA with new test data, refuting Ford's data, and thereby undermining the Administrator's *1992 Waiver Decision*. In response, EPA sought a voluntary remand of Ethyl's pending petition, which this court granted in *Ethyl Corp. v. Browner*, 989 F.2d 522, 524 (D.C. Cir. 1993). In November of 1993, toward the end of the remand's 180-day period,

Ethyl and EPA entered into discussions about extending the deadline; Ethyl then agreed to withdraw and immediately resubmit its waiver application on November 30, 1993, beginning another 180-day period, to end on May 29, 1994. 58 Fed. Reg. 64,761, 64,763 (1993). For purposes of the resubmitted application, EPA determined that Ethyl had demonstrated that use of MMT at the specified concentration will not cause or contribute to a failure of any emission control device or system to achieve compliance with the emissions standards pursuant to section 211(f)(4). *Id.* at 64,764-65.

In May of 1994, Ethyl and EPA agreed once again to extend the deadline for final agency action to July 13, 1994, and on that day, EPA issued the waiver decision which is the subject of this case. See *Waiver Decision* at 42,231. The Administrator “interpret[ed] section 211(f)(4) of the Act as establishing a two-stage process for evaluating waiver applications.” *Id.* at 42,259. First, according to the Administrator, a determination must be made “whether an applicant has met its burden of demonstrating that a fuel [additive] does not cause or contribute to a failure to meet regulated emission standards.” *Id.* In the “second stage,” the Administrator claimed that she had the discretion to “consider other factors [such as the potential health effects resulting from use of a fuel additive] in determining whether granting a waiver is in the public interest and consistent with the objectives of the Clean Air Act.” *Id.* The Administrator noted that she had determined in November of 1993 that Ethyl satisfied the first criterion; i.e., that “use of Ethyl’s product HiTEC 3000 in unleaded gasoline at the specified concentration will not cause or contribute to a failure to achieve compliance with vehicle emission standards.” *Id.* As to “other factors,” however, the Administrator found that “there is a reasonable basis for concern about the effects on public health that could result if EPA were to approve use of MMT in unleaded gasoline.” *Id.* at 42,260. Thus, the Administrator again denied Ethyl’s request for a waiver of section 211(f)’s prohibition of new fuel additives.

II. ANALYSIS

The principal dispute in this case involves EPA’s interpretation of section 211(f)(4) of the Act. Ethyl contends that EPA has acted contrary to law in denying Ethyl’s application for a waiver under section 211(f)(4) on public health grounds. Ethyl argues that the waiver provision contemplates only emissions criteria. EPA, on the other hand, contends that Congress has not directly spoken on the issue of whether the Administrator may consider the public health implications of fuel additives before granting or denying a section 211(f)(4) waiver. Thus, it argues, this court must defer to the Agency’s reasonable interpretation of section 211(f)(4) as providing the Administrator with discretionary authority to consider factors “in the public interest” and in accordance with the “objectives of the Clean Air Act” in waiver determinations.

A. Public Health Determination under Section 211(f)(4)

In reviewing an agency’s construction of the statute which it administers, a court first looks to whether Congress has spoken to the precise question at issue: if Congress’s intent can be ascertained from the plain language of the statute, then that intent must be given effect. *Chevron U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842-43 (1984). In this case, given the plain language of section 211(f)(4), we are obliged to give effect to “the unambiguously expressed intent of Congress.” *Id.*

Section 211(f)(4) instructs the Administrator to consider a new fuel additive’s effects only on emission standards. The language of the provision, allowing for a waiver of the prohibition if the manufacturer can show that its additive “will not cause or contribute to a failure of any emission control device or system . . . to achieve compliance . . . with the emission standards,” § 211(f)(4), is specific and definite; it does not permit the Administrator

to consider other factors “in the public interest.” When compared to the language in section 211(c)(1)(A), which authorizes the Administrator to control or prohibit fuel additives if the emission product contributes “to air pollution which may reasonably be anticipated to endanger the public health,” it is all the more apparent that Congress’s definite scheme does not afford the kind of discretion the EPA would find. Finally, the legislative history of section 211(f) also indicates that Congress was concerned with MMT’s effects on emissions, not on public health. Given the plain meaning of the statute, we hold that the EPA erred in considering the health effects of MMT in deciding whether to grant Ethyl a waiver for its fuel additive.

1. The Language of Section 211(f)(4)

Section 211(f)(1) prohibits the introduction into commerce of new fuel additives which are not “substantially similar” to existing commercial fuel additives, and section 211(f)(4) allows the Administrator to waive that prohibition upon a finding that the fuel additive does not cause or contribute to a failure of vehicles to meet emission standards. Specifically, section 211(f)(4) allows the Administrator to waive that prohibition upon a showing that the emission products of the fuel additive

will not cause or contribute to a failure of any emission control device or system (over the useful life of any vehicle in which such device system is used) to achieve compliance by the vehicle with the emission standards with respect to which it has been certified pursuant to section 206 of this title.

The plain language of the provision makes clear that waiver decisions are to be based on one criterion: a fuel additive’s effect on emission standards. And Congress was specific as to how the Agency was to evaluate that criterion: it was to assess whether the additive’s emission products “causes or contributes” to an emission control device’s ability to comply with the Act’s emission standards. Nowhere in this waiver provision is there any mention of applicants establishing or the Administrator determining a fuel additive’s effect on public health. In basing her waiver decision on the public health implications of MMT, the Administrator acted contrary to the plain language of section 211(f)(4).

* * *

2. The Language of Section 211(c)(1)

Another telling indication that the Administrator has misconstrued the meaning of section 211(f)(4), is the plain language of a nearby provision, section 211(c)(1), which explicitly instructs the Administrator to consider a fuel additive’s effects on public health. Section 211(c)(1) authorizes the Administrator to “control or prohibit” the manufacture or sale of any fuel additive

(A) if in the judgement of the Administrator any emission product of such fuel or fuel additive causes, or contributes, to air pollution which may reasonably be anticipated to endanger the public health or welfare, or (B) if emission products of such fuel or fuel additive will impair to a significant degree the performance of any emission control device or system which is in general use. . . .

This provision not only establishes two criteria—public health implications and emission standard problems—for controlling or prohibiting the sale of fuel additives, it also establishes standards by which the Administrator evaluates those criteria. In assessing an additive’s effect on public health, the Administrator must determine whether its emission products cause or contribute to air pollution which “may reasonably be anticipated to endanger” the public health; and in assessing an additive’s effect on emission standards, the Administrator must

determine whether its emission products “will impair to a significant degree” the emissions performance of any emission control device or system. *Id.* The language of section 211(c)(1) demonstrates that Congress crafted a very definite scheme in which the Administrator was to consider certain criteria before taking certain actions. Specifically, she considers emission effects of fuel additives before granting waivers under section 211(f)(4), and emissions effects as well as public health effects before prohibiting or controlling the manufacture or sale of fuel additives under section 211(c)(1). The language of section 211(c)(1) only underscores our conclusion that Congress did not delegate to the Agency the authority to consider other factors “in the public interest” such as public health when acting under section 211(f)(4).

* * *

In sum, the Administrator of the EPA clearly misconstrued the criterion by which she grants and denies waivers for fuel additives. The language of section 211(f)(4) is clear and specific; the Administrator is to consider MMT’s effects on the ability of “any emission control device or system . . . to achieve compliance by the vehicle with the emission standards.” Should the Administrator wish to consider whether the emission products of MMT “may reasonably be anticipated to endanger the public health,” *id.* § 211(c)(1)(A), she may initiate proceedings under section 211(c)(1). The Administrator plainly oversteps her authority when she considers other factors “in the public interest” such as the public health implications of an additive in section 211(f)(4) waiver proceedings.

* * *

III. CONCLUSION

* * * Accordingly, we grant Ethyl’s petition for review and instruct the EPA to grant Ethyl’s request for a waiver. Our decision that the Administrator erred in refusing to grant Ethyl a waiver after finding that it had satisfied the only statutory criteria in section 211(f)(4) does not have any bearing on the Administrator’s authority to initiate appropriate proceedings under section 211(c) to satisfy any Agency concerns relating to matters of public health.

So ordered.

NOTES

1. Notwithstanding the court’s decision, the EPA refused to register MMT until it met certain testing requirements pursuant to rules promulgated by EPA in 1994. Fuel additives registered before the enactment of the 1994 rules did not have to meet these requirements. In *Ethyl Corporation v. Browner*, 67 F.3d 941 (D.C. Cir. 1995), the court held that MMT should be treated as having been registered on November 30, 1993—the date that EPA should have ruled on Ethyl’s waiver request. As a result, MMT was found not subject to the 1994 testing rules.

2. In *Ethyl Corporation v. EPA*, 541 F.2d 1 (D.C. Cir. 1976), (*en banc*), *cert. denied*, 426 U.S. 941 (1976), the court construed an earlier version of Section 211(a)(1) which allowed EPA to regulate fuel additives whose emission products “will endanger the public health or welfare.” Ethyl, which was seeking to avoid regulation of lead additives in gasoline, argued that additives could not be regulated under this section unless endangerment to public health or welfare could be proved with scientific certainty. The court rejected Ethyl’s “cramped and unrealistic interpretation of § 211(c)(1)(A).” Any doubts regarding the adverse health impacts associated with airborne lead have now been erased. See *Small Refinery Lead Phase-Down*

Task Force v. EPA, 705 F.2d 506, 527-529 (D.C. Cir. 1983). Ambient concentrations of lead have fallen dramatically since 1975. See Environmental Quality, 20th Annual Report, App. E., Table 41 (Council on Environmental Quality, 1990), due, almost entirely, to the restrictions on use of leaded gasoline. The 1990 amendments banned the sale of leaded gasoline after December 31, 1995. § 211(n).

3. The 1977 Amendments to the Act emphatically endorsed the *en banc* panel's majority decision in the *Ethyl Corporation* case. H.R. REP. NO. 95-294, 95th Cong. 1st Sess. 43-50 (1977). To avoid any future misunderstanding regarding the scope of the "will endanger" standard, § 211(a)(1)(A) was amended to authorize EPA regulation of the emission products of fuels or fuel additives "which may reasonably be anticipated to endanger the public health or welfare." The House Committee explained the purposes behind this provision:

A. To emphasize the preventive or precautionary nature of the act, i.e., to assure that regulatory action can effectively prevent harm before it occurs; to emphasize the predominant value or protection of public health;

B. To authorize the Administrator to weigh risks and make reasonable projections of future trends; thus, to find a middle road between those who would impose a nearly impossible standard of proof on the Administrator before he may move to protect public health and those who would shift the burden of proof for all pollutants to make the pollution source prove the safety of its emissions as a condition of operation;

C. To assure consideration of the cumulative impact of all sources of a pollutant in setting ambient and emissions standards, not just the extent of the risk from the emissions from a single source or class of sources of the pollutant; to require consideration of cumulative or synergistic effects of multiple pollutants; to mandate evaluations of total body burden of contaminants;

D. To provide the same standard of proof for regulation of any air pollutant, whether that pollutant comes from stationary or mobile sources, or both, and to make the vehicle and fuel industries equally responsible for cleaning up vehicle exhaust emissions;

E. To assure that the health of susceptible individuals, as well as healthy adults, will be encompassed in the term "public health," regardless of the section of the act under which the Administrator proceeds;

F. To reflect awareness of the uncertainties and limitations in the data which will be available to the Administrator in the foreseeable future to enable him to execute his rulemaking duties under this act, because of the limitations on research resources and the fact that decision making about the risks to public health from air pollution falls on "the frontiers of scientific and medical knowledge"; to provide for adequate judicial review of the reasonableness of the Administrator's judgment in assessing risks, while restraining the courts from attempting to act "as the equivalent of a combined Ph.D. in chemistry, biology, and statistics" or from applying a standard of review which is appropriate only to review of adjudications or formal fact finding.

Id. at 49-50.

4. *Protection of Catalytic Converters.* Other than lead, the primary pollutants associated with automobile exhaust are hydrocarbons, carbon monoxide and nitrous oxides. Virtually all new automobiles in use today employ catalytic converters to oxidize or burn these emissions. The catalyst used in such converters, however, is neutralized by certain substances such as

lead, phosphorous, barium or cadmium. Thus, in addition to contributing to airborne lead pollution, leaded gasoline can contaminate the devices used to control other forms of pollution. To address this problem, Congress enacted § 211(a)(1)(B) which authorizes the EPA to control or prohibit fuels or fuel additives if the emissions products of such fuels or additives “will impair to a significant degree the performance of any emission control device or system which is in general use.” Pursuant to this provision EPA has adopted regulations which prohibit the introduction of leaded gasoline into automobiles which are marked or designed exclusively for the use of unleaded fuel. 40 C.F.R. § 80.22(a)(1996). Manufacturers of automobiles are required to mark the gas inlet area and the instrument panel so as to inform the driver and the person filling the gas tank of the restriction. 40 C.F.R. § 80.24 (1996). In addition, the gas tank inlet must be smaller than the standard nozzle for leaded gasoline pumps. 40 C.F.R. § 80.24(b) (1996). In *Amoco Oil Co. v. EPA*, 501 F.2d 722 (D.C. Cir. 1974) the Court sustained EPA’s definition of leaded gasoline as gasoline containing in excess of 0.05 grams per gallon of lead, as both necessary and feasible. *Id.* at 742-43. It struck down in part, however, EPA’s attempt to impose liability in certain circumstances on refiners or distributors who introduce leaded gasoline into cars designed for unleaded gasoline. *Id.* at 749. Subsequent rules drafted by EPA to incorporate the limitations required by the decision were also struck down as extending liability to refiners and distributors “well beyond the bounds of traditional vicarious liability.” *Amoco Oil Co. v. EPA*, 543 F.2d 270, 275 (D.C. Cir. 1976). Professor Currie has criticized the majority opinion in the second *Amoco Oil* opinion for failing to recognize that the common law does not control questions of statutory interpretation, and that the scope of permissible liability had been determined in the first *Amoco* decision. CURRIE, AIR POLLUTION: FEDERAL LAW AND ANALYSIS § 2.44 (Callaghan & Co. 1981).

5. Registration of Fuels and Fuel Additives. Section 211(a) of the Act prohibits the sale, offer for sale, or introduction into commerce of any fuel or fuel additive that has not been registered with the Administrator. Section 211(b) further provides that the Administrator shall require the submission of information regarding chemical composition of any additive, its concentration in the fuel, and its purpose. The Administrator may require the manufacturer “to conduct tests to determine potential public health effects” of any fuel or fuel additive and provide other pertinent information. § 211(b)(2)(A). In 1975, EPA promulgated regulations to implement these provisions. 40 Fed. Reg. 52,011 (1975). These rules included motor vehicle engine oil used to lubricate the engine within the scope of fuel additives. The basis for EPA’s action was that lubricants and additives to them may have effects or emissions similar to the propellants and that those effects may be harmful. *Id.* In *Lubrizoil Corp. v. EPA*, 562 F.2d 807 (D.C. Cir. 1977), a motor vehicle oil manufacturer successfully challenged EPA’s inclusion of lubricant oil within the scope of the phrase “fuels or fuel additives.” The court accepted the petitioner’s argument that Congress intended the common sense meaning of “fuels or fuel additives” as “substances used to *propel* motor vehicles.” *Id.* at 816. A mere five days prior to the court’s opinion, Congress enacted the Clean Air Act Amendment of 1977. While the Amendments themselves did not contain any clarification of the term “fuels or fuel additives,” the 1977 House Report on the Amendments offered the following version of Congress’ intent in its prior use of the term:

[T]he Committee, in repeating the terms “fuel” and “fuel additives” intended that these terms be construed broadly, as with existing Section 211, to include any substance that is intentionally put into a vehicle’s motor, either directly or indirectly, and which is combusted in the engine. In terms of the potential effect on pollution control devices or on public health, it matters not whether any such

substance makes its way from the engine to the gas tank or is put directly into the engine.

H.R. Rep. No. 95-294, 95th Cong., 1st Sess. 309 (1977). Had the court been aware of this language would it likely have reached a different conclusion?

6. Testing of fuels and fuel additives appears to have been made mandatory by the 1977 Amendments to the Act. Section 211(e) now requires EPA to promulgate regulations to implement the Administrator's testing authority for *each* fuel or fuel additive which is currently registered and for any fuels or fuel additives for which an application for registration is later filed. Upon compliance with these provisions the Administrator must register the fuel or fuel additive. *Id.* The regulations pertaining to the registration of fuels and fuel additives are found at 40 C.F.R. Part 79 (1997).

7. *Manganese.* The 1977 Amendments added a new subsection (f) to § 211 which prohibits the introduction of any new fuel or fuel additive for use in light duty motor vehicles manufactured after model year 1974 that is not substantially similar to existing fuels and fuel additives. The 1990 Amendments extended this prohibition to all motor vehicles. § 211(f)(1)(B). EPA may waive this restriction if it determines that the new fuel will not contribute to the failure of any emission control device. § 211(f)(4). The provision was added after the Senate received testimony regarding the increased use of a fuel additive, MMT, an organomanganese compound. The substance was found to impair the performance of emission control devices. Section 211(f)(2) of the Act expressly prohibits the sale of gasoline with manganese concentrations in excess of 0.0625 grams per gallon.

8. EPA's authority to revoke a waiver issued under § 211(f) was considered by the Court of Appeals for the District of Columbia Circuit in *American Methyl Corporation v. EPA*, 749 F.2d 826 (D.C. Cir. 1984). The petitioner, American Methyl, had developed an additive to be used in a methanol/gasoline blend marketed as Petrocoal. Petrocoal can be produced more cheaply than gasoline. In 1981, American Methyl applied for and obtained a waiver of the § 211(f) prohibitions. Shortly thereafter a trade association petitioned EPA to have the waiver reconsidered. A supplemental petition was filed in 1983 with evidence suggesting that Petrocoal caused automobiles to exceed hydrocarbon emission standards. On the basis of this information, EPA proposed to revoke its waiver of § 211(f) claiming inherent authority to do so. American Methyl challenged EPA's authority to revoke the prior waiver under § 211(f). The court held that EPA had no such authority. According to the Court, revocation of a § 211(f) waiver could only be accomplished in accordance with the more cumbersome administrative procedures of § 211(c), which sets out EPA's general authority to regulate and prohibit fuels. *See also Motor Vehicle Mfrs. Ass'n v. EPA*, 768 F.2d 385 (D.C. Cir. 1985), *cert. denied, sub nom., American Methyl Corp. v. Motor Vehicle Mfrs. Ass'n.*, 474 U.S. 1082. (1986).

9. Violations of § 211 are subject to civil fines of \$25,000 "for each and every day of such violation and the amount of economic benefit or savings resulting from the violation." § 211(d)(1).

10. Although emissions which result from the combustion of vehicle fuels are a significant concern, evaporative emissions from the fuels themselves pose a serious problem as well. In a rulemaking proceeding first proposed in 1987, EPA explained why:

Evaporative hydrocarbon (HC) emissions from gasoline-related sources are volatile organic compounds (VOC), and as such they contribute substantially to the

formation of ozone (and other photochemical oxidants) in the atmosphere. Ozone formation is most active during the summer months because the chemical reactions involved rely on direct sunlight and high ambient temperatures.

Ozone is a powerful oxidant, and as such reacts readily with a wide range of substances. In humans, ozone irritates the respiratory system and reduces lung function and laboratory studies suggest that it may damage lung and other tissue. There is concern that this damage can impair breathing and reduce immunity to disease for people in good health, and the effect may be more severe for people with pre-existing respiratory diseases. Thus, violation of the National Ambient Air Quality Standard (NAAQS) is considered a serious public health concern.

Oxidation by ozone and other photochemical oxidants can impair plant tissue and reduce the yield of some crops, as well as damage materials such as rubber products.

* * *

Despite the imposition of various HC controls, many areas of the nation continue to violate the ozone NAAQS. Based on the latest three-year period for which complete air quality monitoring data are available (1982-84), EPA has determined that 73 urban areas are currently exceeding the ambient standard. Twelve of these areas are located in California. The significance of the nationwide non-attainment problem is clearly indicated by considering the fact that well over 100 million people live in the 73 urban areas which are known to exceed the ozone standard.

52 Fed. Reg. 31,275 (1987). The 1990 amendments to the Act attempt to address this problem in several ways. For example, as noted in *Natural Resources Defense Council v. Reilly*, 983 F.2d 259 (D.C. Cir. 1993), *supra*, on-board vapor recovery systems will eventually be required for all light duty motor vehicles § 202(a)(6). Further, EPA is required to promulgate evaporation emissions rules for *all* gasoline-fueled motor vehicles, during operation and over two or more days of non-use, and under “ozone-prone summertime conditions.” § 202(k). A third approach to the problem of evaporation emissions is regulation of vehicle fuels. The amount of evaporation emissions depends on the fuel’s volatility. As the EPA has noted:

[T]he volatility of a liquid is a measure of its tendency to evaporate. Gasoline is composed of a number of hydrocarbon components which are very volatile under most conditions. When these vapors are present in sufficient quantities in the atmosphere on hot, sunny summer days, they can react to form substantial ground-level concentrations of ozone.

Gasoline components vary in their respective volatilities. Since “light-end” hydrocarbons—particularly butane—are the most volatile components in commercial gasoline, they make up the largest part of gasoline vapor. However, evaporated gasoline will also include smaller amounts of heavier hydrocarbons. The aromatic compound benzene is one of these components, and we discuss it further below because it is a known human carcinogen in addition to contributing to ozone formation.

* * *

Although vehicles are able to operate well on a fairly wide range of gasoline volatilities, there are technological upper and lower limits. For the vehicle to start cold, there must be enough fuel vapor in the air reaching the cylinder to ignite—fuel of too low volatility at too low a temperature can cause starting

problems. At the other extreme, a fuel whose volatility is too high for the temperature or elevation it is experiencing can actually vaporize inside the fuel system, interrupting the fuel supply ("vapor lock").

* * *

The most common measure of fuel volatility under ambient conditions-which is useful in evaluating vehicle evaporative emissions-is the Reid Vapor Pressure, or RVP. RVP is measured at 100° F, which is in the usual range of temperatures found in vehicle fuel tanks during the summer.

52 Fed. Reg. 31,278. Unfortunately, the trend in fuel production has been toward increased volatility:

There has been a steady trend upward in the average volatility of commercial gasoline over the past 30 years. Two main factors account for this increase. First vehicle design has over the years become progressively more tolerant of higher RVP fuels primarily due to the increasing availability of fuel injected engines. As vehicle tolerance of higher volatility has increased, the American Society for Testing and Materials has adjusted their recommended RVP limits upward as well. (This last happened in 1970 and could occur again since vehicle technology continues to improve.) Second, there is a strong economic incentive to add as much butane to fuel as vehicles will tolerate since butane is much cheaper than gasoline. The improved vehicle technology has thus allowed refiners to increase the fraction of butane in the fuels they produce, resulting in a substantial increase in the average volatility of fuels available across the country. Whereas in 1970 commercial summertime gasolines averaged around 9.0 psi RVP, current gasolines nationwide average about 10.5 psi in the summertime and for the most part have reached the ASTM limits for the areas in which they are sold.

52 Fed. Reg. 31,279. Congress responded in the 1990 Amendments by establishing fuel volatility standards. Section 211(h) requires EPA to promulgate standards making it unlawful to introduce into commerce gasoline with an RVP of more than 9.0 psi. More stringent standards may be established for nonattainment areas, but the rules may not preclude sales of gasolines with an RVP of 9.0 psi in attainment areas unless the area was previously an ozone nonattainment area. Under the current EPA regulations the RVP for gasoline sold in certain designated areas between June 1 and September 15 is limited to 7.8 psi. 40 C.F.R. 80.27(a)(2) (1977).

11. Reformulated Gasolines (RFG): Section 211(k) requires EPA to promulgate standards for reformulated gasoline, which is to be used in the nine worst (extreme and severe) ozone nonattainment areas. § 211(k)(9)(D). Other areas must be included in this program one year after being designated as a severe ozone nonattainment area. Reformulated gasoline is that which meets either a specific formula or a performance standard. § 211(k)(3). In *American Petroleum Institute v. EPA*, 52 F.3d 1113 (D.C. Cir. 1995), the court held that EPA could not require that 30% of the oxygen in RFG be derived from renewable resources such as ethanol because the sole purpose of the RFG program was to reduce air pollution caused by VOCs and toxic emissions. Since the renewable oxygenated resource (ROR) requirement would not reduce emissions, they were not valid. *Id.* at 1119. The regulations establishing standards for RFG are found at 40 C.F.R. Part 80, Subpart D (1977).

12. Oxygenated Gasolines: Section 211(m) requires that those CO nonattainment areas which exceed a CO design value of 9.5 ppm sell only oxygenated fuels during those times of

the year when the area is most prone to high ambient concentrations of CO. This period is to be determined by EPA and cannot be less than four months. § 211(m)(2)(B). Those areas of the country subject to the reformulated and oxygenated gasoline requirements are identified in Garrett & Winner, *A Clean Air Act Primer*, CLEAN AIR DESKBOOK, p.64, Appendix 9B and 9C (Env. L. Inst., 1992)

13. *Low Sulfur Diesel Fuel*: During the debate on the 1990 Amendments, Congress heard testimony that particulate emissions from diesel-equipped engines cause cancer, genetic mutations, and other health related ailments. S. REP. NO. 228, 101st Cong., 1st Sess. 111 (1989). The most cost-effective way of removing particulates from diesel engine exhaust was desulfurization of diesel fuel. This could be accomplished at either the tailpipe or through fuel regulation, but Congress determined that fuel regulation would be far more cost-effective. *Id.* Accordingly, § 211(i) prohibits the sale of diesel fuel with sulfur concentrations in excess of 0.05% effective on October 1, 1993. This compares with a 1986 average sulfur content in diesel fuel of 0.27%.

13 JUDICIAL REVIEW AND RULEMAKING PROCEEDINGS

Most of the cases reviewed thus far in the text were filed under § 307(b)(1) of the Act. Until this point, however, the text avoids any detailed discussion of the limitations and scope of that provision. This section of the book is intended to remedy that omission and to offer some additional insights into § 304, the citizen suit provision of the Act. General administrative law problems arising in the context of judicial review under the Clean Air Act are also considered.

A. Petitions for Review and Rulemaking Proceedings

Before turning to the cases a quick review of the language of selected portions of § 307 should prove helpful.

Petitions for Review: Section 307(b)(1) provides for judicial review by petition to the appropriate Circuit Court of all “final actions” of the EPA Administrator. Specifically enumerated as subject to review “only in the United States Court of Appeals for the District of Columbia Circuit” are the promulgation of ambient air quality standards, new source performance standards, emission standards (or other requirements) for hazardous air pollutants, emission standards for new motor vehicles (except HC, CO, and NO_x standards for light-duty vehicles¹), and aircraft engines, regulations implementing the enforcement requirements at §§ 113, 119, and 120 of the Act, and any other “nationally applicable” regulations or action by the Administrator. Locally applicable actions such as decisions approving SIPs, or “any other final action of the Administrator . . . which is locally or regionally applicable” may be filed only in the circuit that encompasses the locus of the challenged action. If, however, the Administrator determines that any locally or regionally applicable action is “based on a determination of

¹ The express exception from the review provisions of § 307(b)(1) for HC, CO and NO_x emissions standards for light duty vehicles does not mean that review of such standards is unavailable; rather, it seems that review of such standards must be obtained in accordance with other general federal statutes that afford jurisdiction, such as 28 U.S.C. § 1331 (federal question jurisdiction). Judicial review would not appear to have been precluded because no intent to do so is expressed in the statute. See 5 U.S.C. §§ 701, 702. “A person suffering legal wrong because of agency action . . . within the meaning of a relevant statute, is entitled to judicial review thereof.” The only exceptions to this provision are where a statute precludes judicial review or where the action is committed to agency discretion by law. 5 U.S.C. § 706.

nationwide scope or effect,” and he so publishes that determination, review reverts exclusively to the District of Columbia Circuit Court.

Petitions under § 307(b)(1) must be filed within 60 days from the date that notice of the action is published in the Federal Register. Thus, any of the tens of thousands of persons who may be affected by national regulations promulgated by EPA under the Act must file an action within 60 days from the date notice is published in a document they may never even receive, or forever lose the right to challenge the rules. The seemingly harsh result occasioned by this provision is tempered by the fact that a person can always petition an agency to amend, modify or repeal a rule under § 4(d) of the Administrative Procedure Act. 5 U.S.C. § 553(e). If the EPA denies the petition, judicial review of that decision is available.

Nonetheless, Justice Powell has questioned whether the narrow time frame afforded by the law (prior to 1977, a person had only 30 days to file a petition) comports with due process. *Adamo Wrecking Co. v. United States*, 434 U.S. 275, 290-91 (1978) (concurring opinion of Justice Powell). Compare *Holmes Limestone, Inc. v. Andrus*, 655 F.2d 732 (6th Cir. 1981), cert. denied, 456 U.S. 995 (1982) (J.J. White & Blackmun dissenting); *Drummond Coal Co. v. Watt*, 735 F.2d 469 (11th Cir. 1984).

Notwithstanding these restrictions, the Administrative Conference of the United States has recommended that persons be allowed to challenge the validity of a regulation in any enforcement proceeding. 41 Fed. Reg. 56,768 (1976) (Recommendation No. 76-4, C.D-1). Do you agree with this recommendation? Where would such actions be filed? Why does the EPA oppose the recommendation?

Judicial review under § 307 is generally on the record made before the agency. Section 307(c) of the Act, however, allows the court, on application of a party, to admit additional evidence if the party demonstrates “to the satisfaction of the court that such additional evidence is material *and* that there were reasonable grounds for the failure to adduce such evidence on the proceedings before the Administrator. . . .”

Rulemaking Proceedings Under the Clean Air Act: Many of the actions subject to judicial review under § 307(b)(1) are rulemaking proceedings to which the procedural standards of § 307(d) apply. Included within this subsection are the promulgation or revision of—(1) ambient air quality standards; (2) state implementation plans; (3) new source performance standards; (4) hazardous air pollutants; (5) regulations pertaining to the acid deposition program; (6) regulations relating to fuels and fuel additives; (7) aircraft emission standards; (8) regulations pertaining to coal conversion orders or nonferrous smelter orders (but not decisions granting or denying such orders); (9) regulations pertaining to ozone protection; (10) PSD regulations; (11) regulations pertaining to testing of new motor vehicles; (12) regulations pertaining to noncompliance penalties; (13) regulations pertaining to vehicle warranties and compliance; (14) regulations pertaining to interstate pollution; and (15) “such other actions as the Administrator may determine.”

The procedures that must be followed in promulgating regulations are set out at § 307(d) and more rigorous than the informal rulemaking provisions of the APA. 5 U.S.C. § 553. Among the more significant requirements are the following:

- (1) EPA must establish a rulemaking docket for each rule. The docket must be open for public inspection, and must include all comments received, and all supporting documentation relating to the proposed rule. The docket comprises the exclusive record in the event of judicial review of the final rule. § 307(d)(2), (4), (7).
- (2) Each proposed and final rule must be accompanied by a “basis and purpose” statement which describes—(A) the factual data on which it is based; (B) the

methodology used in obtaining the data; and (C) the major legal interpretations and policy considerations underlying the proposed rule. § 307(d)(3), (6)

(3) EPA must solicit comments and allow a public hearing on the proposed rule, and must respond to significant comments in the final rule. § 307(d)(5), (6)(B). *But see, California ex rel. Air Resources Board v. EPA*, 714 F.2d 1437 (9th Cir. 1985), wherein the court held that comments submitted by the plaintiffs were not “significant” because they were not supported by modeling or other data.

Judicial review of EPA rules under the Clean Air Act generally follows the “arbitrary and capricious” standard of the APA, § 307(d)(9), but “[i]n reviewing alleged procedural errors, the court may invalidate the rule only if the errors were so serious and related to matters of such relevance to the rule that there is a substantial likelihood that the rule would have been significantly changed if such errors had been made.” § 307(d)(8). It will be a rare case indeed when such a showing can be made, and parties alleging procedural errors have had difficulty overcoming this limitation. *Ohio v. EPA*, 784 F.2d 224 (6th Cir. 1986); *Sierra Club v. Costle*, 657 F.2d 298 (D.C. Cir. 1981); *but see, Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506 (D.C. Cir. 1983).

HARRISON V. PPG INDUSTRIES, INC.

446 U.S. 578 (1980)

Mr. Justice STEWART delivered the opinion of the Court.

Section 307(b)(1) of the Clean Air Act (Act) provides for direct review in a federal court of appeals of certain locally and regionally applicable actions taken by the Administrator of the Environmental Protection Agency (EPA) under specifically enumerated provisions of the Act, and of “*any other final action of the Administrator under [the Act] . . . which is locally or regionally applicable.*” (Emphasis added.) The issue in this case is whether the Court of Appeals for the Fifth Circuit was correct in concluding that it was without jurisdiction under § 307(b)(1) to entertain a petition for review in which PPG Industries, Inc. (PPG), and Conoco, Inc. (Conoco), the respondents here, challenged a decision of the Administrator concerning the applicability of EPA’s “new source” performance standards to a power generating facility operated by PPG. More specifically, we must decide whether the Administrator’s decision falls within the ambit of “any other final action” reviewable in a court of appeals under § 307(b)(1).

I

The dispute underlying this jurisdictional question involves a decision of the Administrator under § 111 of the Act. That provision requires the Administrator to publish, and from time to time to revise, a list of categories of any stationary source that he determines “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare,” § 111(b)(1)(A), and to promulgate regulations establishing standards of performance for “new sources” within the list of those categories, § 111(b)(1)(B). The Act defines a “new source” as “any stationary source, the construction or modification of which is commenced after the publication of regulations (or, if earlier, proposed regulations) prescribing a standard of performance under this section which will be applicable to such source.” § 111(a)(2).

In 1971, the Administrator included "fossil fuel-fired steam generators" in his list of stationary sources. 36 Fed. Reg. 5931. Later that year, pursuant to his mandate to promulgate "new source" performance standards, the Administrator established certain emission limits for any "fossil fuel-fired steam generating unit" of more than 250 million Btu's per hour heat input, the construction or modification of which was commenced after August 17, 1971, the date on which the standards were proposed. 40 C.F.R. §§ 60.1-60.15, 60.40-60.46 (1979). These "new source" regulations define the term, "fossil fuel-fired steam generating unit," § 60.41(a), and also create a procedure under which the Administrator, upon request, will determine whether any action taken or planned by the owner or operator of a facility constitutes or will constitute "construction" or "modification" of the facility for purposes of triggering the applicability of the performance standards. § 60.5.

Sometime in 1970, the respondent PPG, a chemical manufacturing corporation, began the planning and preliminary construction of a new power generating facility at its plant in Lake Charles, La. That facility, designed to take advantage of fuel-efficient "cogeneration" technology, was to consist of two gas turbine generators, two "waste-heat" boilers, and a turbogenerator. The dispute between EPA and PPG concerns the applicability of the "new source" performance standards to the waste-heat boilers of this facility. This controversy first arose in 1975, when the respondent Conoco, PPG's fuel supplier, informed EPA that Conoco was switching the supply of fuel to the Lake Charles facility from natural gas to fuel oil. An exchange of correspondence ensued, initiated by EPA's request that PPG submit additional information bearing on whether the waste-heat boilers were covered by the "new source" standards. PPG's submissions revealed that although assembly of the waste-heat boilers had not begun until 1976, the new power facility itself, of which the boilers were an integral component, had been originally designed and partially ordered in 1970, a year before the proposed date of the "new source" performance standards.

On the basis of PPG's submissions, the Regional Director for Enforcement of the EPA notified PPG of his conclusion that the boilers were subject to the "new source" standards, since construction of the boilers themselves had not begun until long after January 14, 1971, the date on which the standards had been proposed. In response, PPG took the position that the boilers were part of an integrated unit, the construction of which had begun in 1970, before the proposed date of the standards. The Regional Director, nevertheless, reaffirmed his initial decision.

Pursuant to the procedure outlined in the "new source" regulations, 40 C.F.R. § 60.5 (1979), PPG then submitted a formal request for an EPA determination that (1) the "new source" standards for "fossil fuel-fired steam generators" do not apply to the type of boilers in question, and (2) in any event since construction of the facility of which the boilers were a part began before the date on which the standards were proposed, the boilers were not "new sources" and thus not subject to the performance standards. In the event that EPA determined that PPG's waste-heat boilers were subject to the standards, PPG also requested a clarification as to how those standards would apply.

Responding to PPG's request, the Regional Administrator notified PPG by letter that he had concluded that the waste-heat boilers were, indeed, subject to the "new source" standards for "fossil fuel-fired steam generators," and rejected PPG's argument that construction of the boilers had begun with the construction of other facets of the Lake Charles facility. Thus, the Regional Administrator affirmed the previous EPA determination that the waste-heat boilers were subject to the "new source" performance standards. With regard to the manner in which those standards were to apply to the waste-heat boilers, the Regional Administrator indicated that since PPG's gas turbine generators were not subject to the "new source" standards, PPG would be held accountable only for those emissions from the waste-heat boilers attributable to

the combustion of fossil fuel, not those emissions attributable to waste heat from the gas turbine generators.

PPG then filed a petition in the Court of Appeals for the Fifth Circuit, seeking review of EPA's decision concerning the applicability of the "new source" standards to its waste-heat boilers. Because of its uncertainty regarding the proper forum for judicial review, PPG also filed a complaint for injunctive relief against the Administrator in the United States District Court for the Western District of Louisiana. That suit has been stayed pending the disposition of the present case.

PPG's uncertainty, and the issue in this case, stem from conflicting views as to the proper interpretation of § 307(b)(1) of the Act. Before 1977, § 307(b)(1) provided for exclusive review in an appropriate court of appeals of certain locally or regionally applicable actions of the Administrator under several specifically enumerated provisions of the Act. Actions of the Administrator under provisions not specifically enumerated in § 307(b)(1) were reviewable only in a district court under its federal-question jurisdiction, 28 U.S.C. § 1331. Congress expanded the ambit of § 307(b)(1) in 1977. The Clean Air Act Amendments of 1977, Pub.L. 95-95, 91 Stat. 776, added to the list of locally or regionally applicable actions reviewable exclusively in the appropriate court of appeals both (1) actions of the Administrator under another specifically enumerated provision of the Act, and (2) "*any other final action of the Administrator under [the] Act which is locally or regionally applicable.*" (Emphasis added.) Later in 1977, in enacting the Clean Air Act Technical and Conforming Amendments, Pub.L. 95-190, 91 Stat. 1404, Congress added several more provisions to those listed in § 307(b)(1) under which a locally or regionally applicable action of the Administrator is reviewable in the appropriate court of appeals.

It was under § 307(b)(1), as amended, that PPG filed a petition for review in the Court of Appeals for the Fifth Circuit. Despite having filed its petition there, PPG, and Conoco as intervenor, argued that court was without jurisdiction, since the Administrator's decision was not an action taken under one of the provisions specifically enumerated in § 307(b)(1), and could not be properly characterized as "any other final action of the Administrator." The latter phrase, they argued, referred only to other locally or regionally applicable final actions under the provisions of the Act specifically enumerated in § 307(b)(1). In response, EPA argued that the phrase, "any other final action," should be read literally to mean any final action of the Administrator.

The Court of Appeals concluded that the Administrator's decision did not fall within the meaning of "any other final action" under § 307(b)(1). 587 F.2d 237. It was the court's view that "[i]f Congress intended . . . to cast the entire responsibility for reviewing all EPA action under the Act into the courts of appeals, the numeration of specific sections would appear to be redundant." *Id.*, at 243. The "most revealing" aspect of the legislative history of § 307(b)(1), the court thought, was the complete absence of any discussion of such a "massive shift" in jurisdiction. Moreover, the court found it unlikely that Congress could have intended a shift of jurisdiction that would require the courts of appeals to review decisions of the Administrator that simply applied or interpreted his regulations, as in this case. Such a decision, the court noted, is often based on a "skeletal record" that may leave the reviewing court unable to perform meaningful judicial review. Since an appellate court is ill-suited to augment such a record, especially when compared to a trial court in which the tools of discovery are available, the court concluded that "whatever addition to the jurisdiction of the courts of appeals Congress may have contemplated by adding the 'any other final action' language to § 307(b)(1), we assume that section was drafted with the mechanical limitations of the courts of appeals in mind." 587 F.2d, at 245. Accordingly, the Court of Appeals dismissed PPG's petition for lack of jurisdiction under § 307(b)(1). We granted certiorari, 444

U.S. 823 because of the importance of determining the locus of judicial review of the actions of EPA.

II

It is undisputed that the Administrator's decision concerning the applicability of the "new source" performance standards to PPG's waste-heat boilers was locally applicable action under a provision of the Act not specifically enumerated in § 307(b)(1). The question at issue is whether the Administrator's decision falls within the scope of the phrase, "any other final action of the Administrator," so as to make that decision reviewable in a federal court of appeals under § 307(b)(1).

At the outset, we note that the parties are in agreement that the Administrator's decision was "final action" as that term is understood in the context of the Administrative Procedure Act and other provisions of federal law. It is undisputed that the Administrator's ruling represented EPA's final determination concerning the applicability of the "new source" standards to PPG's power facility. Short of an enforcement action, EPA has rendered its last word on the matter. The controversy thus is not about whether the Administrator's decision was "final," but rather about whether it was "any other final action" within the meaning of § 307(b)(1), as amended in 1977.

A

The petitioners argue that the phrase, "any other final action," should be construed in accordance with its literal meaning so as to reach any action of the Administrator under the Act that is "final" and not taken under a specifically enumerated provision in § 307(b)(1). The respondents argue that the statutory language should be construed more narrowly. Relying on the familiar doctrine of *ejusdem generis*, they assert that the phrase, "any other final action," should be read not to reach all final actions of the Administrator, but rather only those similar to the actions under the specifically enumerated provisions that precede that catchall phrase in the statute. The similarity that the respondents discern among the actions under the specifically enumerated provisions in § 307(b)(1) is that those actions must be based on what the respondents refer to as "a contemporaneously compiled administrative record," by which they mean a record "based on administrative proceedings reflecting at least notice and opportunity for hearing." Since the Administrator's informal decision in this case was not based on such a record, the respondents argue that his decision was not "other final action" within the meaning of § 307(b)(1) and thus not within the jurisdiction of the Court of Appeals.

The respondents' reliance on the rule of *ejusdem generis* is, we think, misplaced in two respects. Under the rule of *ejusdem generis*, where general words follow an enumeration of specific items, the general words are read as applying only to other items akin to those specifically enumerated. Applying this rule to § 307(b)(1), the respondents argue that "any other final action" must refer only to final actions based on an administrative record reflecting at least notice and opportunity for a hearing. The flaw in this argument is that at least one of the specifically enumerated provisions in § 307(b)(1), namely, § 112(c) of the Act, 42 U.S.C. § 7412(c) (1976 ed., Supp. II), does not require the Administrator to act only after notice and opportunity for a hearing. In fact, the respondents themselves recognize that an action by the Administrator under § 112(c) would be based on an administrative record not unlike that involved in this case. Thus, even if the rule of *ejusdem generis* were applied, it would not significantly narrow the ambit of "any other final action" under § 307(b)(1).

The second problem with the respondents' reliance on the rule of *ejusdem generis* is more fundamental. As we have often noted: "The rule of *ejusdem generis*, while firmly established, is only an instrumentality for ascertaining the correct meaning of words when there is

uncertainty.”” *United States v. Powell*, 423 U.S. 87, 91, quoting *Gooch v. United States*, 297 U.S. 124, 128. With regard to § 307(b)(1), we discern no uncertainty in the meaning of the phrase, “any other final action.” When Congress amended the provision in 1977, it expanded its ambit to include not simply “other final action,” but rather “any other final action.” This expansive language offers no indication whatever that Congress intended the limiting construction of § 307(b)(1) that the respondents now urge. Accordingly, we think it inappropriate to apply the rule of *ejusdem generis* in construing § 307(b)(1). Rather, we agree with the petitioners that the phrase, “any other final action,” in the absence of legislative history to the contrary, must be construed to mean exactly what it says, namely, any other final action.

B

* * *

The respondents also rely on what the Committee and the Congress did not say about the 1977 amendments to § 307(b)(1). It is unlikely, the respondents assert, that Congress would have expanded so radically the jurisdiction of the courts of appeals, and divested the district courts of jurisdiction, without some consideration and discussion of the matter. We cannot accept this argument. First, although the number of actions comprehended by a literal interpretation of “any other final action” is no doubt substantial, the number would not appear so large as ineluctably to have provoked comment in Congress. Secondly, it would be a strange canon of statutory construction that would require Congress to state in committee reports or elsewhere in its deliberations that which is obvious on the face of a statute. In ascertaining the meaning of a statute, a court cannot, in the manner of Sherlock Holmes, pursue the theory of the dog that did not bark.

C

The respondents finally argue that, as a matter of policy, the basic purpose of § 307(b)(1)—to provide prompt pre-enforcement review of EPA action—would be better served by providing for judicial review of cases such as this in a district court rather than a court of appeals. It is the respondents’ view that since agency action predicated on neither formal adjudication nor informal rulemaking is apt to be based on a record too scant to permit informed judicial review, the district court is the preferable forum, since the tools of discovery are there available to augment the record, whereas in a court of appeals a time-consuming remand to EPA might be required.

This is an argument to be addressed to Congress, not to this Court. It is not our task to determine which would be the ideal forum for judicial review of the Administrator’s decision in this case. See, e.g., Currie & Goodman, *Judicial Review of Federal Administrative Action: Quest for the Optimum Forum*, 75 Colum. L. Rev. 1 (1975). Rather, we must determine what Congress intended when it vested the courts of appeals with jurisdiction under § 307(b)(1) to review “any other final action.” The language of the statute clearly provides that a decision of the sort at issue here is reviewable in a court of appeals, and nothing in the legislative history points to any different conclusion.

We add only that, as a matter of policy, this conferral of jurisdiction upon the courts of appeals is not wholly irrational. The most obvious advantage of direct review by a court of appeals is the time saved compared to review by a district court, followed by a second review on appeal. It may be seriously questioned whether the overall time lost by court of appeals remands to EPA of those cases in which the records are inadequate would exceed the time saved by forgoing in every case initial review in a district court. But whatever the answer to this empirical question, an appellate court is not without recourse in the event it finds itself

unable to exercise informed judicial review because of an inadequate administrative record. In such a situation, an appellate court may always remand a case to the agency for further consideration.

For the reasons stated, we hold that the Court of Appeals erred in dismissing the petition for want of jurisdiction. Accordingly, the judgment is reversed, and the case is remanded to the Court of Appeals for further proceedings consistent with this opinion.

It is so ordered.

Mr. Justice REHNQUIST, dissenting.

The effort to determine congressional intent here might better be entrusted to a detective than to a judge. The Court rejects the application of the traditional canon of *ejusdem generis* to the phrase “any other final action” on the grounds that (1) there is no uncertainty as to the meaning of that phrase, *ante*, at 1895, and (2) at least one of the provisions now included in § 307(b)(1)—i.e., § 112(c)—does not require the Administrator to act after notice and opportunity for comment or hearing, *supra*, at 1895. While I agree with the Court that the phrase “any other final action” may not by itself be “ambiguous,” I think that what we know of the matter makes Congress’ additions to § 307(b)(1) in the Clean Air Act Technical and Conforming Amendments of 1977 no less curious than was the incident in the Silver Blaze of the dog that did nothing in the nighttime. If I am correct in this, we must look beyond the language of the phrase “any other final action” in ascertaining congressional intention. The Court did just that in *Chemehuevi Tribe of Indians v. FPC*, 420 U.S. 395 (1975).

Before 1977, § 307(b)(1) granted exclusive jurisdiction to courts of appeals to review only a limited class of actions taken by the Administrator. *District of Columbia v. Train*, 533 F.2d 1250, 1254 (1976); *Utah Power & Light Co. v. EPA*, 553 F.2d 215, 217 (1977). The EPA was required to provide for notice and an opportunity for hearing or comment with respect to all such actions. These procedural requirements generally result in the creation of an administrative record that is more susceptible of judicial review by courts of appeals than actions such as the one in this case in which no notice and opportunity for comment are required. Indeed, it has been stated: “The requirements that interested persons have an opportunity at least for written comment and that the agency provide a general statement of reasons virtually assure that an appellate court will have a meaningful record to review. While it is true that in many instances informal adjudication also produces an administrative record, the nature and scope of the records vary widely from one type of action to another and cannot provide the same assurance that appellate review will be feasible.” Currie & Goodman, *Judicial Review of Federal Administrative Action: Quest for the Optimum Forum*, 75 Colum. L. Rev. 1, 57 (1975). Thus the grant of exclusive jurisdiction to courts of appeals in pre-1977 § 307(b)(1) actions fully comports with the traditional role of appellate courts in reviewing agency decisions that are based on development of factual issues by means of an administrative record. * * *

[I]n adding the phrase “any other final action” Congress gave no indication whatsoever that it intended to make reviewable in the courts of appeals actions that differed substantially in character from those authorized by § 120 and the other sections listed in § 307(b)(1). Instead the limited legislative history on the subject suggests that the amendment was aimed at resolving problems of venue under the section, not at effecting a major jurisdictional shift from the district courts to courts of appeals.

* * *

In my view, absent any clear indication to the contrary, the statute should not be construed as creating a broad expansion of the jurisdiction of the federal courts of appeals. Such an approach is quite appropriate in this case because the jurisdictional expansion wrought by the Court is thoroughly inconsistent with the traditional role of appellate courts. Indeed, I think it is difficult to believe that Congress would adopt a massive shift in jurisdiction from the district courts to the courts of appeals without any comment whatsoever.

* * *

In a case where the construction of legislative language such as this makes so sweeping and so relatively unorthodox a change as that made here, I think judges as well as detectives may take into consideration the fact that a watchdog did not bark in the night.

[The concurring opinions of Justices Powell and Blackmun, and the dissenting opinion of Justice Stevens are omitted.]

NOTES

1. How does the majority respond to Justice Rehnquist's contention that appellate review may not be feasible in some instances of informal agency action because the administrative record will not be adequate? From a policy perspective which view makes the most practical sense?

2. Are administrative enforcement actions such as the issuance of notices of violation and compliance orders subject to judicial review under § 307(b)(1)? Consider *Union Electric Co. v. EPA*, 593 F.2d 299 (8th Cir. 1979), which was decided after the 1977 Amendments, but before the Supreme Court's decision in *Harrison v. PPG Industries*, *supra* at Chapter 10.

3. *The Silver Blaze*, alluded to by Justice Stewart in his majority opinion and referred to specifically by Justice Rehnquist in his dissenting opinion, is a short story written by Sir Arthur Conan Doyle. In the story, Sherlock Holmes deduces that a crime must have been committed by an insider because a dog kept in the stable did not bark on the night of the crime. "I had grasped the significance of the silence of the dog, for one true inference invariably suggests others." Sir Arthur Conan Doyle, *The Adventure of the Speckled Band and Other Stories of Sherlock Holmes*, p. 167 (Signet, 1965).

B. Citizen Suits

The broad review afforded under § 307(b)(1) may be had *only* in the appropriate court of appeals. Is review under § 307(b)(1) thereby intended to be exclusive? If so, what remains of the provision for citizen suits which are filed in the federal district courts under § 304 of the Act? One obvious distinction is that the citizen suit provision authorized private rights of action against individuals who violate the law. § 304(a)(1) and (3). In addition, however, § 304(a)(2) authorizes action against the Administrator where there is "an alleged failure of the

Administrator to perform any act or duty under this [Act] which is not discretionary. . . .” Section 304(a)(2)’s reference to “a failure . . . to perform any [nondiscretionary] act” most obviously suggests a situation where the Administrator fails to meet a statutory deadline, as occurred, for example, in a case involving EPA’s failure to promulgate NO_x and particulate standards for heavy duty vehicles within a time frame specified by law. *Natural Resources Defense Council v. Ruckelshaus*, 21 BNA Env. Rep. Cases 1953 (D.D.C. 1984), *supra* at Chapter 12.

It is not difficult, however, to hypothesize many other nondiscretionary actions of the Administrator, which fall within the scope of § 307(b)(1). Thus, for example, where the Administrator approves a SIP which violates the law one can say that the Administrator failed to perform his nondiscretionary duty to disapprove a SIP which violates the law. The possible overlap between § 304(a)(2) and § 307(b)(1) is the subject of the following cases.

ENVIRONMENTAL DEFENSE FUND V. THOMAS

870 F.2d 892 (2d Cir. 1989)

WINTER, Circuit Judge:

This appeal involves the Clean Air Act, 42 U.S.C. §§ 7401 et seq. (1982 and Supp. IV 1986) (“the Act”), and in particular its bifurcated jurisdictional scheme for judicial review of decision making by the Environmental Protection Agency (“EPA”). The Act provides that suits to compel the Administrator to perform non-discretionary duties may be brought only in district courts, while petitions seeking review of the Administrator’s discretionary actions must be brought in the Court of Appeals for the District of Columbia. *See, e.g., Citizens for a Better Env’t v. Costle*, 515 F. Supp. 264, 268 (N.D. Ill. 1981). Jurisdiction under the Act thus turns on the threshold question of whether the Administrator’s challenged action (or inaction) is discretionary or non-discretionary.

In the instant appeal, a number of environmentalist groups, along with six states, have challenged the Administrator’s failure to revise the “National Ambient Air Quality Standards” (“NAAQS”) for sulphur oxides (“SO_x”). SO_x are causative agents of both acid rain and dry acid deposition—phenomena we will refer to collectively as “acid deposition.” Judge Edelstein held that the Administrator’s authority to revise those NAAQS is discretionary and that the district court therefore did not have jurisdiction to entertain the suit. *Environmental Defense Fund v. Thomas*, 85 Civ. 9507, 1988 WL 36332 (S.D.N.Y. April 19, 1988). Although we agree that the Administrator has discretion to decide on the precise form and substance of the NAAQS at issue, we believe that under the circumstances the Administrator has a non-discretionary duty to make some formal decision whether to revise those NAAQS. Subsequent published actions by the Administrator have begun the process of decision making, however, and we remand so the district court may enter an order that the rulemaking be continued to final decision.

BACKGROUND

The Clean Air Act was first passed in the 1960s and has since undergone two major legislative overhauls. The first of these overhauls, in 1970, established a multi-stage process for EPA evaluation of potential air pollutants. In the first stage, the EPA was, after scientific study, to publish “criteria” for the evaluation of any given potential pollutant. Section 108 of the Act. After the establishment of these “criteria,” the EPA was to publish two types of initial

NAAQS pursuant to Section 109(b) of the Act: (i) primary ambient air quality standards, designed to “protect the public health”; and (ii) secondary ambient air quality standards, designed to “protect the public welfare from any known or anticipated adverse effects associated with the presence of [a given] air pollutant in the ambient air.”

The 1970 amendments distinguished between pollutants for which criteria had been announced before 1970 and pollutants for which criteria were announced after 1970. In the case of pollutants for which criteria had been announced before 1970 (which included SO_x), Sections 109(a)(1)(A) and (B) required the EPA to issue proposed initial primary and secondary NAAQS within 120 days of the passage of the 1970 amendments. In the case of pollutants for which criteria were announced after 1970, the amendments required the EPA to issue proposed initial primary and secondary NAAQS simultaneously with its publication of “criteria.” The 1970 amendments added that both primary and secondary NAAQS “may be revised in the same manner as promulgated.” §§ 109(b)(1) and (2).

The 1970 amendments also introduced into the statute a bifurcated jurisdictional scheme. In Section 307 of the Act, the 1970 amendments vested the Court of Appeals for the District of Columbia with exclusive jurisdiction to review a variety of rule promulgations and other “final actions” by the Administrator. § 307(b). In addition, Section 304 of the Act, the so-called “Citizen Suits” provision, permits any person to bring a civil action in a district court “against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this chapter which is not discretionary with the Administrator. . . .” § 304(a)(2).

The second statutory overhaul occurred in 1977. These amendments added Section 109(d) concerning the “review and revision” of NAAQS, which provides that: [n]ot later than December 31, 1980, and at five-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under Section 108 . . . and promulgate such new standards as may be appropriate. . . . The Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph. § 109(d). It is this section that plaintiffs seek to enforce by this action under Section 304.

The pollutants involved in this appeal, SO_x , are causative of acid deposition and belong to the class of pollutants for which criteria had been issued before the 1970 amendments. In 1971, the Administrator promulgated primary and secondary NAAQS for SO_x . 36 Fed. Reg. 8186. The secondary NAAQS were reviewed by the Court of Appeals for the District of Columbia and were thereafter remanded to the Administrator with instructions to elaborate on their justification. *Kennecott Copper Corp. v. EPA*, 462 F.2d 846 (D.C. Cir. 1972). On that remand, the Administrator modified the secondary NAAQS. 38 Fed. Reg. 25,679 (1973). The secondary NAAQS as modified were not designed to protect against the deleterious effects of SO_x associated with acid rain and dry acid deposition—deleterious effects on water quality, wildlife, soils and forests, and corrosive effects of SO_x on building materials, monuments and products. 38 Fed. Reg. 25,680 (1973). Neither the primary SO_x NAAQS as promulgated in 1971, nor the modified secondary SO_x NAAQS of 1973, have been revised since.

In 1979, the Administrator undertook a review of the air quality criteria for SO_x in response to the passage of Section 109(d)(1) in 1977. 44 Fed. Reg. 56,731 col. 2 (1979). In 1982, that review resulted in the publication of new criteria both for SO_x and for particulate matter, another pollutant, which includes forms of SO_x , listed under Section 108. The new criteria described in some detail the ill effects associated with acid deposition. The Administrator did not, however, issue revised NAAQS for SO_x . Indeed, the Administrator took no official public action, neither revising the existing standards nor formally declining to revise them. In 1984 and 1985, the EPA issued a three-volume “Critical Assessment” on the acid deposition effects of SO_x . This did not constitute a formal revision of the SO_x criteria, and the

Administrator again took no action in conjunction with the issuance of this "Critical Assessment."

In 1985, appellants brought the instant case in the District Court for the Southern District of New York, pursuant to Section 304, the "Citizen Suits" provision of the Act, to compel the Administrator to promulgate revised NAAQS for SO_x. Their complaint alleged that the revised criteria of 1982 and the "Critical Assessment" of 1984 and 1985 constituted a formal finding that SO_x caused acid deposition threatening to the public health and welfare. Appellants claimed that those findings imposed on the Administrator a non-discretionary duty to revise the NAAQS for SO_x, pursuant to Sections 109(b) and 109(d), in order to combat such health and welfare effects. Judge Edelstein disagreed. Looking to the language of Section 109(d), he concluded that the section created a mandatory duty only to revise pollutant criteria—an action the Administrator had taken in 1982. The Administrator, he held, had discretion not to revise the SO_x NAAQS if he so chose. Because the duty to revise the NAAQS was discretionary, he concluded that the district court lacked jurisdiction over the dispute and dismissed the complaint.

One week after Judge Edelstein's decision, the EPA issued a "Proposed Decision Not To Revise the National Ambient Air Quality Standards for Sulfur Oxides (Sulfur Dioxide)." 53 Fed. Reg. 14,926 (April 26, 1988). In that "Proposed Decision," the Administrator announced that he was formally "propos[ing] not to revise [the primary and secondary] standards" for sulfur oxides, 53 Fed. Reg. at 14,926 col. 1, and invited comments. However, the Administrator expressly excluded the problem of acid deposition from the list of welfare effects for which no revision of the secondary SO_x NAAQS was necessary:

1. Based upon the current scientific understanding of the acid deposition problem, it would be premature and unwise to prescribe any regulatory control program at this time.
2. When the fundamental scientific uncertainties have been reduced through ongoing research efforts, EPA will craft and support an appropriate set of control measures.

Id. at 14,936 col. 1. In light of this EPA action, appellants have narrowed their claim on appeal. Rather than challenging both the primary and secondary NAAQS, they abandoned the challenge to the primary NAAQS, which the Administrator has formally proposed not to revise in his "Proposed Decision," and limited their appeal to a challenge to the secondary NAAQS, the revision of which the Administrator has declared to be "premature and unwise."

DISCUSSION

Section 304 grants jurisdiction to district courts to compel the Administrator to perform non-discretionary statutory duties. *Cf. Council of Commuter Org. v. Metropolitan Transp. Auth.*, 683 F.2d 663, 665 (2d Cir. 1982). Section 307 grants exclusive jurisdiction to the Court of Appeals for the District of Columbia over "final" and other actions of the EPA. Because Section 307 embodies a grant of exclusive jurisdiction, it appears that if the District of Columbia has jurisdiction over the present action, the district court does not. *New England Legal Found. v. Costle*, 666 F.2d 30, 33 (2d Cir. 1981). If the District of Columbia Circuit does not have jurisdiction, however, then either the district court has jurisdiction or appellants have no forum in which to assert their claims.

Appellants take the position that the district court has jurisdiction and must order the Administrator to revise the secondary NAAQS. Appellees argue that the Administrator may stand pat, deciding neither to revise the NAAQS nor to make a public decision that revision is unnecessary. In their view, such a non-decision is unreviewable by the Court of Appeals for the District of Columbia under Section 307 because it involves no decision or other agency

“action” and is also invulnerable to challenge in district courts under Section 304 because it is discretionary. We disagree with both parties.

In view of the revised criteria and “Critical Assessment,” we believe the Administrator must make some decision regarding the revision of the NAAQS that is thereafter reviewable under Section 307 in the Court of Appeals for the District of Columbia. Because the duty to make some decision is nondiscretionary, it is enforceable under Section 304 in the district courts. Appellants argue that in the present case a revision is mandatory and should be ordered by the district court. The substance of the Administrator’s decision is beyond the power of the district court, however, its authority being limited to ordering the Administrator to make a formal decision. Were we to order a revision, we would have to set out criteria governing that revision, and the district court would potentially have to apply those criteria in an enforcement proceeding. An order to revise would thus plunge the district court into the merits, matters that are the exclusive province of the District of Columbia Circuit. We appreciate that this distinction is somewhat artificial but believe it is necessary to confine the district court’s authority and to defer to the authority of the District of Columbia Circuit. The April 26, 1988 “Proposed Decision Not To Revise,” however, has begun the formal process of decision making, and we remand for entry of an order directing that process to continue.

Our analysis begins with an examination of the jurisdiction of the Court of Appeals for the District of Columbia. In *Oljato Chapter of Navajo Tribe v. Train*, 515 F.2d 654 (D.C. Cir. 1975), that court held that “a challenge to the Administrator’s refusal to revise a standard of performance is in effect a challenge to the standard itself and so can be brought only in this court under Section 307(b)(1) of the Clean Air Act. . . .” *Id.* at 656. This language suggests that the District of Columbia Circuit has exclusive jurisdiction over the instant matter. The categorical language of *Oljato* is, however, misleading. *Oljato* involved Section 111 of the Act, which, at that time, included language permitting, but not requiring, the Administrator to revise the “standards of performance” for new stationary sources of air pollution. Because the statute included no stated deadlines for revision of the standards in question, the *Oljato* court could reasonably treat the decision to revise or not to revise as one wholly within the discretion of the Administrator. Since *Oljato*, however, the District of Columbia Circuit has distinguished between those revision provisions in the Act that include stated deadlines and those that do not, holding that revision provisions that do include stated deadlines should, as a rule, be construed as creating non-discretionary duties. *Sierra Club v. Thomas*, 828 F.2d 783, 791 (D.C. Cir. 1987). Section 109(d), the provision at issue here, includes a stated deadline of “[n]ot later than December 31, 1980, and at five-year intervals thereafter.” *Oljato* thus does not apply.

The District of Columbia Circuit has also held that it may review agency inaction under the Administrative Procedure Act where the agency has unreasonably delayed in performing a duty over which the District of Columbia Circuit would have jurisdiction after final action under the Act. *Sierra Club*, 828 F.2d at 795-96. Thus, the District of Columbia Circuit arguably has jurisdiction on the grounds that the EPA has unreasonably delayed its decision whether or not to revise the secondary NAAQS for SO_x. The District of Columbia Circuit was careful in *Sierra Club*, however, to limit its exclusive jurisdiction to cases involving “a right the denial of which we would have jurisdiction to review upon final agency action but the integrity of which might be irreversibly compromised by the time such review would occur.” *Id.* at 796. Appellants’ claimed right in the instant case is not one whose integrity is likely to be “irreversibly compromised.” We therefore conclude that the instant action does not raise a claim within the exclusive grant of jurisdiction to the District of Columbia Circuit under Section 307.

Having determined that the District of Columbia Circuit does not have exclusive jurisdiction, we now address what mandatory or, as the case may be, discretionary duties are created by the following language of Section 109(d) of the Act. To repeat, that section states in pertinent part: [n]ot later than December 31, 1980, and at five-year intervals thereafter, the Administrator shall complete a thorough review of the criteria published under section 108 . . . and promulgate such new standards as may be appropriate. . . . The Administrator may review and revise criteria or promulgate new standards earlier or more frequently than required under this paragraph. Clearly this section includes both mandatory (“shall complete,” “required”) and non-mandatory language (“as may be appropriate”). Appellees rely on the phrase “as may be appropriate,” arguing that Judge Edelstein was correct in holding that that language confers on the Administrator a wholly discretionary authority to revise the NAAQS, not to revise them, or simply not to address the issue with a formal public opinion. Appellants argue that, as a matter of statutory construction, Section 109(d) must be interpreted in light of the mandatory language of Sections 109(a) and (b). Section 109(a), which requires the initial promulgation of NAAQS, contains clearly mandatory language directing the Administrator to issue NAAQS within 120 days for those pollutants for which criteria had been published before 1970 and to issue proposed NAAQS simultaneously with the publication of criteria for newly identified pollutants. Appellants argue that Section 109(d) should be read in light of this clearly mandatory language.

We find this argument unpersuasive. Section 109(d) contains no cross-reference to Section 109(a). Moreover, it is difficult to perceive why the standard for the promulgation of initial NAAQS should be identical to that for revised NAAQS. Congress could have repeated the mandatory language of Section 109(a) in Section 109(d), but did not do so. Appellants also argue that Section 109(d) should be read in light of Section 109(b)(2), which declares that secondary NAAQS “shall specify a level of air quality the attainment and maintenance of which in the judgment of the Administrator . . . is requisite to protect the public welfare. . . .” Section 109(d) does include a cross-reference to Section 109(b). Because Section 109(b)(2) expressly entrusts the substance of secondary NAAQS to the “judgment of the Administrator,” it is difficult to read it as imposing non-discretionary duties. Furthermore, that section adds that secondary NAAQS “may be revised in the same manner as promulgated” (emphasis added). This permissive language suggests that, contrary to appellants’ contention, the Administrator has discretion not to follow the procedures for issuing initial NAAQS when revising NAAQS. Harmonizing Section 109(d) with Section 109(b) thus does nothing to further appellants’ case.

Appellants also contend that language of Section 109(d) itself, read in isolation, imposes a mandatory duty to revise the NAAQS. The phrase “as may be appropriate,” they argue, is subject to the section’s command that the Administrator “shall make . . . revisions.” Under this view, the district court has jurisdiction to order the Administrator to make appropriate revisions in the NAAQS—power in short to issue orders affecting the substance of revised NAAQS. Again we disagree. The words “as may be appropriate” clearly suggest that the Administrator must exercise judgment and the presence of “shall” in the section implies only that the district court has jurisdiction to order the Administrator to make some formal decision whether to revise the NAAQS, the content of that decision being within the Administrator’s discretion and reviewable only in the District of Columbia Circuit. *Cf. Natural Resources Defense Council v. New York State Dept. of Envtl. Conservation*, 700 F. Supp. 173 (S.D.N.Y. 1988).

Appellants advance a final argument, based on our case law. Conceding *arguendo* that the “as may be appropriate” language creates only discretionary authority, they contend that the district court has jurisdiction to compel the Administrator to revise its secondary NAAQS, the content of the revision being left to the Administrator. Under this view, the Administrator

does not have power to decide not to revise. This argument is based on *Natural Resources Defense Council v. Train*, 545 F.2d 320 (2d Cir. 1976), which involved Section 108 of the Act. Section 108 requires the Administrator to evaluate potential air pollutants and then to publish a list of those which “endanger public health or welfare,” employing the following language: (a)(1) For the purpose of establishing national primary and secondary ambient air quality standards, the Administrator shall within 30 days after December 31, 1970, publish, and shall from time to time thereafter revise, a list which includes each air pollutant—(A) emissions of which in his judgment, cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. . . . In *Train*, the EPA had evaluated lead, and conceded that lead met its standard for pollutants that “endanger [the] public health or welfare.” It refused, however, to include lead on its list of pollutants. The *Train* plaintiffs brought suit, under Section 304, the “Citizen Suits” provision, seeking to compel the EPA to include lead on its pollutant list. In agreeing with the plaintiffs, we reasoned that the EPA had a non-discretionary duty to list lead, noting that the language of Section 108 was clearly mandatory and that the EPA had concededly found lead to “endanger public health or welfare.” Because the duty to list lead was not discretionary in light of the finding of harmfulness, we held that the district court had jurisdiction to hear the suit and ordered the Administrator to include lead on his list of pollutants.

Appellants contend that *Train* requires a similar result in the instant case. They observe that the EPA’s revised criteria of 1982 and its “Critical Assessment” of 1984-1985 both acknowledge the adverse effects of SO_x-caused acid deposition. The published acknowledgments of those adverse effects are, appellants argue, the equivalent of the EPA’s explicit concession in *Train* concerning the adverse effects of lead. The 1982 criteria and the “Critical Assessment” constitute, in effect, a formal declaration that revision of the SO_x NAAQS is “appropriate” according to the terms of Section 109(d). In their view, the Administrator has thus already exercised his discretion, impliedly found revision to be “appropriate,” and now has a non-discretionary duty, enforceable in the district court, to revise the NAAQS in line with his revised criteria.

This argument did not persuade Judge Edelstein, and it does not persuade us. Even if we were to treat the EPA’s revised criteria of 1982 and its “Critical Assessment” of 1984-1985 as equivalent to the concession of the harmful effects of lead that underlay our holding in *Train*—and it is far from clear that we should do so, *cf. National Resources Defense Council, Inc. v. Thomas*, 689 F. Supp. 246, 254-56 (S.D. N.Y. 1988)—*Train* is still distinguishable from the present case. The duty at issue in *Train* was a thoroughly ministerial one. We did no more than affirm an order compelling the EPA to include “lead” on a list and to issue some NAAQS for lead. We did not, however, specify the content of those NAAQS. *Train*, 545 F.2d at 328. *Train* thus stands solely for the proposition that the district court has jurisdiction, under Section 304, to compel the Administrator to perform purely ministerial acts, not to order the Administrator to make particular judgmental decisions. An order in the instant case to the Administrator to revise the NAAQS for SO_x would be essentially meaningless and unenforceable unless it also directed that he revise those NAAQS in a particular manner. Formulating the details of substantive NAAQS, however, clearly requires the sort of scientific judgment that is the “hallmark” of agency discretion, *Kennecott Copper Corp., Nevada Mines v. Costle*, 572 F.2d 1349, 1354 (9th Cir. 1978); *Lead Industries Ass’n v. EPA*, 647 F.2d 1130, 1146 (D.C. Cir.), *cert. denied*, 449 U.S. 1042 (1980), and is exclusively within the jurisdiction of the District of Columbia Circuit.

However, if *Train* does not justify all of the relief that appellants seek, that is not to say that it does not justify any relief at all. Although the district court does not have jurisdiction to order the Administrator to make a particular revision, we cannot agree with appellees that

the Administrator may simply make no formal decision to revise or not to revise, leaving the matter in a bureaucratic limbo subject neither to review in the District of Columbia Circuit nor to challenge in the district court. No discernible congressional purpose is served by creating such a bureaucratic twilight zone, in which many of the Act's purposes might become subject to evasion. The 1982 criteria and the 1984-1985 "Critical Assessment" triggered a duty on the part of EPA to address and decide whether and what kind of revision is necessary. The district court thus does have jurisdiction to compel the Administrator to make some formal decision as to whether or not to revise the secondary NAAQS. *Cf. Natural Resources Defense Council v. New York State Dep't of Env'tl. Conservation, supra.*

* * *

Accordingly, we hold that, while the district court did not have jurisdiction to compel the Administrator to revise the NAAQS, it did have jurisdiction to compel the Administrator to take some formal action, employing rulemaking procedures, *see Thomas v. State of New York*, 802 F.2d 1443 (D.C. Cir. 1986), either revising the NAAQS or declining to revise them.

However, the Administrator's "Proposed Decision Not To Revise" of April 26, 1988, inviting comments on his determination that a decision as to the advisability of revising the secondary NAAQS for acid deposition "would be premature and unwise," is a required procedure in the course of reaching a formal decision. If this process continues, and a formal decision is rendered, appellants will have obtained all the relief to which they are entitled in a Section 304 action. Whether the decision when reached is wrong on the merits—even egregiously wrong—will be for the District of Columbia Circuit to resolve. We remand so the district court can enter an order directing the Administrator to continue the rulemaking to formal decision.

Reversed and remanded.

[The dissenting opinion of Judge Mahoney, which viewed the *Oljato* case as controlling, is omitted.]

NOTES

1. What is the non-discretionary duty of the EPA which the Court finds satisfies the citizen suit requirements of § 304?

2. Most courts that have considered the issue have found that the NAAQS are not emission limits and as such cannot form the basis for a cause of action under § 304. *Coalition Against Columbus Center v. New York*, 967 F.2d 764, 764 (2d Cir. 1992); *Cate v. Transcontinental Pipeline Corp.* 904 F. Supp. 526, 536 (W.D. Va. 1995). But a challenge to a SIP provision that relates directly to attaining the NAAQS can be maintained under § 304. *Coalition Against Columbus Center, supra* at 770.

3. Citizen suits under the Clean Air Act were given an indirect boost by the provisions of the 1990 amendments requiring permittees to submit self-monitoring reports or "compliance certificates." § 504(c). These reports will make it fairly easy for citizens to uncover violations of the law. A similar requirement under the Clean Water Act, which requires permittees to submit "discharge monitoring reports," has proved to be a rich source of information for citizen suits. *See Roy S. Belden, Preparing for the Onslaught of Clean Air Act Citizen Suits: A Review of Strategies and Defenses*, 1 ENVTL. LAWYER 377 (1995).

NATURAL RESOURCES DEFENSE COUNCIL v. EPA

512 F.2d 1351 (D.C. Cir. 1975)

BAZELON, Chief Judge:

Natural Resources Defense Council, Inc., (NRDC) brought this action following the publication of final regulations by EPA pursuant to section 211 of the Clean Air Act, as amended. As initially proposed, the regulations had required gasoline retailers to carry at least one grade of unleaded gasoline and had also laid down standards governing the use of lead additives in all grades of gasoline. In final form, they contained only the lead-free brand requirements. Before briefs were filed, NRDC filed a Motion for Prehearing Conference, Summary Reversal, or Expedited Hearing, urging the immediate need for across-the-board controls on lead additives. This motion was denied without prejudice to its renewal if EPA did not take final action in deciding whether to promulgate such controls within 60 days. Subsequent delays by the agency resulted in an order by this court on October 29, 1973, directing EPA to reach a final decision within thirty days. On November 28, 1973, EPA informed the court that it had decided to issue the regulations in question. NRDC now petitions to withdraw its appeal and for an award of costs and attorneys' fees against EPA under section 304(d) of the Act.

The principle of sovereign immunity precludes the award of costs and fees against the United States "in the absence of a statute directly authorizing it. . . ." In 1966 Congress revamped 28 U.S.C. § 2412 to provide:

Except as otherwise specifically provided by statute, a judgment for costs . . . may be awarded to the prevailing party in any civil action brought by or against the United States or any agency or official of the United States acting in his official capacity. . . .

But "fees and expenses of attorneys" were specifically excluded from the "costs" which courts were authorized to award. This limitation seems, on its face, inconsistent with the broad principle which led to the revision of section 2412 in the first place: "It is fundamental that the law should be uniform in its application." It also presents a significant impediment to the implementation of the "private-attorney-general" theory, as federal agencies are defendants in a large percentage of public interest cases. Having registered these concerns, however, we are left to determine whether Congress has made a specific grant of attorneys' fees covering this case.

I.

Section 304 of the Clean Air Act Amendments authorizes the award of costs and attorneys' fees "whenever the court determines [that] such [an] award is appropriate." This authorization goes specifically to suits brought under section 304(a), which recognizes actions against the Administrator "where there is alleged a failure . . . to perform any act or duty under this chapter which is not discretionary" and grants the district courts jurisdiction to hear these suits and issue appropriate relief. NRDC's action, however, was initiated in this court under section 307(b), which directs petitions for review of specified actions by the Administrator to the circuit courts of appeals. EPA urges us to conclude, therefore, that the provisions of section 304(d) are inapplicable and that in the absence of any other express authorization for the award of fees, NRDC's petition must be rejected.

The same question was considered by the First Circuit in *NRDC v. EPA*. In that case, the court determined that section 304(a) provided the authorization for suits against the Administrator, whether brought in district court or in an appeals court under section 307. Section 307 simply directed that certain actions authorized by section 304(a) be brought in one forum rather than the other. NRDC's appeal was thus an action pursuant to section 304(a) and section 304(d) was applicable. Reluctantly, we find ourselves unable to follow the path by which the First Circuit reached this result.

* * *

Although the major emphasis throughout the development of section 304 was on its role as a vehicle for enforcement of established standards, courts have read it to cover the Administrator's failure to take other steps required of him, such as the promulgation of implementation plans or standards within a specified time. But the language and history do not provide a basis for holding, as a general matter, that section 304 encompasses suits against the Administrator for taking steps alleged to be misguided or uninformed. Review of the Administrator's exercise of judgment, or "discretion," of course, is available under section 307, which establishes exclusive jurisdiction in the courts of appeals for actions within its compass. We conclude, contrary to the First Circuit, that sections 304 and 307 contemplate distinct groups of cases.

Another problem with the view adopted by the First Circuit is simply that the conditions for bringing actions under each section are inconsistent. This point, which is not addressed by the court in *NRDC v. EPA*, rests on the requirement of section 304(b) that no action may be brought pursuant to section 304(a) prior to sixty days after notification of a Administrator. Section 307 requires that appeals be brought within 30 days of the Administrator's action. NRDC urges that these conflicting requirements must be read functionally. The requirement of section 304(b) has the purpose of allowing the Administrator, and other officials, to rectify inaction. No similar requirement is necessary with regard to suits contemplated under section 307, which covers actions which have already been taken. The notice provisions of section 304(b), NRDC concludes, should not be read as a "stone wall" separating one jurisdiction from the other. We find this argument unconvincing, particularly as it would lead to a rather tortured reading of section 304, whereby a section 307 appeal would be considered an action pursuant to section 304(a) for purposes of subsection (d) but not for purposes of subsection (b).

II.

Having come this far, however, we acknowledge a peculiar and for us somewhat troubling aspect of this case. Although brought under section 307, and properly so, NRDC's appeal also resembles in important respects the class of cases contemplated by section 304(a). This resemblance raises the possibility at least that the suit falls within the intended reach of section 304(d), if not within its literal terms. This possibility was not explored by the parties but is significant enough in our view to warrant a brief discussion.

From one point of view, NRDC sought review of "action of the Administrator in promulgating" final regulations which omitted the controls that NRDC thought were immediately necessary. This is the characterization on which our jurisdiction is premised, and it retains validity even though at the time the administrator issued the rules which provoked NRDC's appeal, he continued to consider the promulgation of across-the-board restrictions at some later time. As we said in *Environmental Defense Fund, Inc. v. Hardin*, the line between action and inaction sometimes disappears, particularly where, as here, the deferral of a ruling involves potentially irreversible consequences for human health. Our jurisdiction over the appeal, as within section 307, is suggested further by the national scope of the regulation

involved: as we have indicated, the designation of this court as the exclusive forum for appeals from standard-setting actions by the Administrator was to ensure uniformity in decisions concerning issues of more than purely local or regional impact.

From another point of view, however, NRDC's suit was directed at the "failure of the Administrator to perform [an] act or duty . . . which is not discretionary . . .," i. e., refusal to promulgate controls which, given the information available to him on the health effects of airborne lead, he had no choice but to promulgate. This characterization may rest on an overly broad reading of what Congress intended by "not discretionary," but it was seriously advanced by EPA itself in initially disputing the power of this court to hear and decide the case. The agency urged that NRDC was required to proceed in district court under section 304(a).

It is the fundamental purpose of section 304(d) to encourage meritorious litigation in furtherance of the goals of the Act. But this formulation does not explain why Congress failed to extend the availability of fees to suits brought under section 307. Perhaps Congress understood that affected industries could be counted on to force review of regulations under the Act, attorneys' fees or no, but that the same concerns would not police the sort of nonregulation addressed by section 304(a). Private citizens and public interest groups could be expected to perform that task—but only if steps were taken to mitigate the high costs of suits involving complex questions. These considerations suggest that the purpose of section 304(d), even construed in its strictest sense, is well-served by the availability of fees in this case and a small group of section 307 actions like it.

We are tempted on this analysis to award fees to NRDC notwithstanding our rejection of the First Circuit's construction of the statute. But to do so would strain the limits of our interpretive function, pressing in a direction contrary to a still vital common law principle. It could also impede the development of clear and workable guidelines for the administration of sections 304 and 307 as the Act's basic jurisdictional grants. We decline to bend the statutory framework to accommodate our good intentions, and leave the matter where it belongs, with Congress.

Leave to withdraw the appeal is granted; in all other respects, petitioner's motion is denied.

J. SKELLY WRIGHT, Circuit Judge (concurring and dissenting):

While I concur in Part I of the court's opinion and in much of the analysis in Part II, I am forced to dissent from the court's decision to deny attorneys' fees in this case.

Judge Bazelon has well outlined the reasons for and against awarding attorneys' fees to the Natural Resources Defense Council (NRDC). I am persuaded by the reasons for awarding fees. The litigation here at issue, while apparently properly brought before this court under Section 307 could, in my judgment, have been brought in District Court under Section 304, as well. Of course, so far as this motion is concerned the difference is crucial; Section 304 authorizes attorneys' fees while Section 307 does not. I do not think, however, that the congressional purpose in allowing fees under Section 304 should be frustrated where an action, cognizable under Section 304, is brought under Section 307 instead. I think this is particularly so because the courts have been of so little help to litigants attempting to discern the parameters of Sections 304 and 307. While the courts play jurisdictional badminton with these provisions, batting one case back to the District Court under Section 304 while taking another identical one under Section 307, litigants should not be denied substantial rights because of uncertainty created by courts and Congress. *Compare Sierra Club v. Ruckelshaus*, 344 F.Supp. 253, (D.D.C. 1972) *affirmed on the basis of the District Court opinion*, 4 BNA Env. Rep. Cas. 1815

(1972), *affirmed by an equally divided Court*, 412 U.S. 541 (1973), *with Anaconda v. Ruckelshaus*, 482 F.2d 1301 (10th Cir. 1973), *reversing*, 352 F. Supp. 697 (D. Colo. 1972).

I believe NRDC is an innocent victim of this badminton game. When the evidence before the Administrator proved that lead emissions from automobiles endangered the public health, I believe he had no choice but to regulate those emissions. His failure to perform that nondiscretionary duty created District Court jurisdiction over NRDC's claim under Section 304 while his simultaneous promulgation of related lead regulations created jurisdiction in this court under Section 307. I do not believe NRDC should be penalized for suing under Section 307. Since Congress intended that private citizens bringing such public interest litigation should be rewarded with attorneys' fees and since the law is so unsettled as to which section NRDC should properly have utilized, I would award fees to NRDC. My conclusion that the attorneys' fees provision of Section 304 should be read broadly is buttressed by the impossibility of awarding fees on other theories. *Alyeska Pipeline Service Co. v. Wilderness Society*, 421 U.S. 240 (1975).

Accordingly, I respectfully dissent from the judgment of the court.

NOTES

1. As Judge Bazelon notes in his majority opinion, the First Circuit reached a different conclusion on similar facts. *Natural Resources Defense Council v. EPA*, 484 F.2d 1331 (1st Cir. 1973). The court's reasoning in that case was quite simple:

While the statutory language is confusing, both common sense and the legislative history lead us to conclude that a petition for review is to be regarded as an action pursuant to § 304(a). Section 307 designates the forum; it goes no further. The authorization for, and conditions of, suit are contained in § 304(a). The legislative history reveals that § 307 does no more than direct that some proceedings must be brought in the circuit courts.

Id. at 1336. The court fails, however, to address one of Judge Bazelon's chief concerns—that an action under § 307(b)(1) had to be filed within 30 days (now 60 days) from the date of the Administrator's action, while a citizen suit could not be filed until 60 days' prior notice had been afforded. The Court of Appeals for the Fifth Circuit sided with the D.C. Court in a third case involving the interplay between §§ 304 and 307. *Natural Resources Defense Council v. EPA*, 538 F.2d 1068 (5th Cir. 1976).

2. In 1977, Congress amended § 307(b) of the Act so as to provide expressly for awards of legal fees in cases brought under that section. In describing its action the Senate Report states as follows: "The purpose of the amendments to Section 307 is to carry out the intent of the committee in 1970 that a court may, in its discretion, award costs of litigation to a party bringing a suit under Section 307 of the Clean Air Act. The law has been interpreted otherwise. . . ." S. REP. NO. 95-127, 95th Cong., 1st Sess. 99 (1977).

3. One interesting question raised by these cases, and the subsequent legislative history, is their impact on cases arising under analogous judicial review provisions of other environmental statutes which are patterned after the Clean Air Act of 1970. For example, both the Clean Water Act, 33 U.S.C. §§ 1251 *et seq.*, and the Surface Mining Control and Reclamation Act, 30 U.S.C. §§ 1251 *et seq.*, bifurcate judicial review with separate citizen suit

and petition for review provisions which are patterned after those contained in the 1970 Clean Air Act. Neither statute has been amended, however, to provide for fee recoveries in the manner of § 307 of the Clean Air Act. Should a court award fees in cases involving petitions for review under the water and mining statutes? The Court of Appeals for the District of Columbia Circuit answered that question in the negative in a case under the Clean Water Act on the theory that by amending § 307 Congress evinced an intent to award fees on a petition for review only after the law was amended to so provide. *Montgomery Environmental Coalition v. Costle*, 646 F.2d 595 (D.C. Cir. 1981). Is this decision sound in light of the legislative history on the 1977 Amendment to § 307?

4. *Attorney Fees.* Entitlement to attorney fees in cases under the Clean Air Act has received increasing attention by the courts and the Congress. In a landmark case, *Ruckelshaus v. Sierra Club*, 463 U.S. 680 (1983) the Supreme Court construed § 307(f) of the Act, which provides that “the Court may award costs of litigation (including reasonable attorney and expert witness fees) whenever it determines that such an award is appropriate.” In a 5-4 decision the Court held that this language, which is identical to language contained in 16 other federal statutes, authorized an award only to parties who prevail in litigation. In a subsequent case under the Civil Rights Act, the Court held that a “partially prevailing plaintiff” is entitled only to a partial award. *Hensley v. Eckerhart*, 461 U.S. 424 (1983). See also *Newman v. Piggie Park Enterprises*, 390 U.S. 400, 402 (1968), where the Court held that normally a prevailing party is entitled to a fee award if a statute authorizes such awards.

5. In 1980, Congress amended 28 U.S.C. § 2412 to authorize awards to parties who prevail in litigation against the United States even where the underlying statute does not otherwise authorize awards. Awards under this law, called the Equal Access to Justice Act, are limited to circumstances where the position of the government is substantially unjustified. The maximum hourly rate for an award to attorneys under this law is \$75 (plus cost of living increases).

6. Unlike § 307(b), § 304 of the Act requires 60 days’ prior notice to the Administrator, and where appropriate, to the state and alleged violator, before any citizen suit may be filed. § 304(b). The purpose of this provision is to afford the alleged violator an opportunity to correct the violation and thus obviate the need for litigation. *Friends of the Earth v. Potomac Electric Power Co.*, 546 F. Supp. 1357 (D.D.C. 1982). Failure to provide proper notice will probably lead to dismissal of the action, *City of Highland Park v. Train*, 519 F.2d 681 (7th Cir. 1975), but the cases are not uniform in requiring such dismissal. See e.g., *Metropolitan Washington Coalition For Clean Air v. District of Columbia*, 373 F. Supp. 1089 (D.D.C. 1974), remanded on other grounds, 511 F.2d 809 (D.C. Cir. 1975) where the court held that the purpose of § 304(b) was met merely by staying the action for 60 days to give the Administrator time to act. 373 F. Supp. at 1092.

7. Another important attorney fee case which arose under the Clean Air Act was *Pennsylvania v. Delaware Valley Citizens’ Council for Clear Air*, 478 U.S. 546 (1986); 483 U.S. 711 (1987). In that case the Citizens’ Council successfully sued the State of Pennsylvania to compel implementation of a vehicle emission, inspection, and maintenance program required by the SIP. The Council then sought an award of fees which included time spent on administrative proceedings necessary to the litigation. The Council also claimed that the award should be enhanced on the basis of the superior quality of counsel’s performance and to account for the risk of no fee award. In two split opinions the Court ruled: (1) that fees could be awarded for administrative work necessary to vindicate the Council’s rights; (2) that an award should not be enhanced on the basis of counsel’s superior performance absent a showing

that counsel had not been adequately compensated; and (3) that fees might be enhanced to account for the risk of loss but not on the facts of this case. This last holding, which addresses the sole issue involved in the Court's second opinion, was supported by four justices who would have allowed enhancement for risk of loss on the facts of the case, and one justice, O'Connor, who would allow an enhancement in an appropriate case but not on the facts of this case. Four justices would allow an enhancement only in exceptional cases "where the need and justification for enhancement are readily apparent and supported by evidence in the record and specific findings by the courts." 483 U.S. at 728.

8. *Standing*. One unique aspect of the Clean Air Act's citizen suit provision is that it appears to confer standing on "any person" whatever their interest in the controversy. Most citizen suit provisions in analogous statutes limit standing to persons with an interest which is or may be adversely affected. *See e.g.*, § 520 of the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1270. The Supreme Court has made clear that the "any person" language allows plaintiffs to avoid meeting the prudential requirements for standing—most notably the requirement that plaintiffs show that their interests fall within the zone of interests sought to be protected by the statute. *Bennett v. Spear*, 117 S. Ct. 1154 (1997). Nonetheless, plaintiffs must still satisfy the constitutional requirements for standing, and in recent years that has proved no mean feat. In *Steel Company v. Citizens for a Better Environment*, 118 S. Ct. 1003 (1998), the Supreme Court denied standing to plaintiffs who were seeking to enforce certain filing requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA), 42 U.S.C. § 11001 *et seq.* The case had been filed under the EPCRA citizen suit provision, which expressly authorizes such actions. *Id.* at § 11046(a)(1). By the time the case was filed, however, the alleged violations of EPCRA had been corrected. The Court found that because the violations had been corrected the only remedy available to the plaintiffs was the assessment of a civil penalty. But because the penalty would be paid to the U.S. Treasury and not the plaintiffs, the plaintiffs suffered no injury that could be redressed by judicial action. According to the Court, redressability is one of three constitutional requirements for standing, and plaintiffs could not satisfy this requirement.

9. Can the citizen suit provision in the Clean Air Act be distinguished in any way from the citizen suit provision in EPCRA. Note two possibilities. First, § 304(g)(2) authorizes a reviewing court to order that any civil penalties recovered in a citizen suit action be used in "beneficial mitigation projects which are consistent with this Act and enhance the public health or the environment." Second, § 114(f) authorizes the EPA to "pay an award not to exceed \$10,000 to any person who furnishes information or services which lead to a criminal conviction or a judicial or administrative civil penalty. . . ." How might these provisions be used to avoid the result in the *Steel Company* case? Note that § 304(a)(1) and (3) specifically authorize citizen suits for wholly past violations "if there is evidence that the alleged violation has been repeated." How might Congress amend EPCRA and similar citizen suit provisions to avoid the constitutional problem identified by the Court? In answering this question, consider this comment from the Court: "[T]he civil penalties authorized by the statute . . . might be viewed as a sort of compensation or redress to the respondent if they were payable to respondent."

14 GLOBAL CLIMATE CHANGE

“CLIMATE CHANGE” AND “A GLOBAL WARMING” ARE NOT THE SAME THING

United Nations Environment Program:
<http://www.unep.ch/iuc/fs009.html>

Recent accounts of the scientific debate on climate frequently misrepresent what is being argued about. They suggest that scientists are still discussing whether or not the climate is changing in response to greenhouse gas (GHG) emissions, as if there were a simple yes/no answer. So if a scientist questions the adequacy of present climate models, or fails to find conclusive evidence for global warming in a particular data-set, he or she is often reported as claiming that “there isn’t really a problem”. However, in most scientific circles the issue is no longer whether or not GHG-induced climate change is a potentially serious problem. Rather, it is how the problem will develop, what its effects will be, and how these can best be detected.

The confusion arises from the popular impression that “the enhanced greenhouse effect”, “climate change”, and “global warming” are simply three ways of saying the same thing. They are not. No one disputes the basic physics of the “greenhouse effect”. However, some of the consequences of the basic physics, including higher average temperatures due to “global warming”, are less certain (although highly probable). This is because the fundamental problem concerns the way GHG emissions affect the flow of energy through the climate system, and temperature is just one of many forms energy takes.

In the long term, the earth must shed energy into space at the same rate at which it absorbs energy from the sun. Solar energy arrives in the form of short-wavelength radiation; some of this radiation is reflected away but, on a clear day, most of it passes straight through the atmosphere to warm the earth’s surface. The earth gets rid of energy in the form of long-wavelength, infra-red radiation. But most of the infra-red radiation emitted by the earth’s surface is absorbed in the atmosphere by water vapor, carbon dioxide, and other naturally occurring “greenhouse gases”, making it difficult for the surface to radiate energy directly to space. Instead, many interacting processes (including radiation, air currents, evaporation, cloud-formation, and rainfall) transport energy high into the atmosphere to levels where it radiates away into space. This is fortunate for us, because if the surface could radiate energy into space unhindered, the earth would be more than 30° C colder than it is today: a bleak and barren planet, rather like Mars.

By determining how the air absorbs and emits radiation, greenhouse gases play a vital role in preserving the balance between incoming and outgoing energy. Man-made emissions disturb this equilibrium. A doubling of the concentration of long-lived greenhouse gases (which is projected to occur early in the next century) percent may not sound like much, but

over the entire earth it would amount to trapping the energy content of some three million tons of oil every minute.

The climate will somehow have to adjust to get rid of the extra energy trapped by man-made greenhouse gases. Because there is a strong link between infra-red radiation and temperature, one probable adjustment would be a warming of the surface and the lower atmosphere. But it is important to realize that a warmer climate is not the only possible change, nor even necessarily the most important one. The reason for this is that radiation is not the only energy transport mechanism within the lower atmosphere (although it does play a vital, controlling role). Instead, the surface energy balance is maintained, and surface temperatures are controlled, by that complex web of interacting processes which transport energy up through the atmosphere. In contrast to the case of radiation, it is very difficult to predict how processes like cloud-formation will respond to greenhouse gas emissions.

Global warming is a symptom of climate change, but it is not the problem itself. It may be the clearest symptom we have to look for, but it is important not to confuse the symptom with the disease. The fundamental problem is that human activity is changing the way the atmosphere absorbs and emits energy. Some of the potential consequences of this change, such as sea-level rise, will depend directly on how the surface temperature responds. But many of the most important effects, such as changes in rainfall and soil moisture, may take place well before there is any detectable warming.

NOTES

1. Scientists attempt to measure global climate change through the use of models that consider all components of the climate system C atmosphere, oceans, biosphere, cryosphere, and geosphere.

The *atmosphere* changes in hours, and its detailed behavior is impossible to predict beyond a few days. The upper layers of the *oceans* consists of animals and vegetation and normally changes relatively slowly; reduced rainfall might take years to alter vegetation cover significantly, although certain components (such as human kind) are capable of inducing quite rapid local changes (by setting oil-field ablaze, for example). The *cryosphere* includes sea-ice, glaciers, ice-sheets, and snow-cover. Snow-cover and sea-ice can change quite rapidly, but glaciers and ice-sheets may require decades to millennia. The *geosphere*, which is the solid earth itself, changes slowest of all. A single volcano might affect the climate rapidly, but only temporarily. Aspects of the geosphere which affect long-term climate, such as the location of continents and mountain ranges, take millions of years to change. All five of these components are important for climate modeling. The first four are expected to change in response to greenhouse gas emissions, while changes in the geosphere must be understood for the study of past climates.

How Climate Models Work, United Nations Environment Program <http://www.unep.ch/iucc/fs014.html>.

2. A percentage of human-made greenhouse gas emissions, most—importantly carbon dioxide,—comes from the developed countries. Yet the impacts may fall disproportionately on developing countries. Small island nations, for example, may be inundated by rising sea

levels. See e.g., *Data on Greenhouse Gas Emissions and Sources*, Table 6, <http://www.unep.ch/iucc/fact30.html>, which shows per capita CO₂ emissions in the United States at 19.13, Japan at 8.79, Brazil at 1.39, India at 0.88 and Swaziland at 0.33. Recognizing these realities has helped spur international efforts to address the problem.

3. The United Nations Framework Convention on Climate Change was adopted on May 9, 1992 and by its terms entered into force on March 21, 1994, 90 days after the 50th nation ratified the Convention. 31 I. L. M. 849 (1992). As of early 1997, 165 nations had ratified the Convention. The United Nations Environment Programme, (UNEP) which co-sponsored the negotiations that led to the Convention, maintains substantial information about global climate change and international efforts to address the problem at the UNEP site on the World Wide Web. See generally <http://www.unep.ch/>. Set forth below is a brief history of the Climate Change Convention as seen by UNEP.

A BRIEF HISTORY OF THE CLIMATE CHANGE CONVENTION UNITED NATIONS ENVIRONMENT PROGRAM

<http://www.unep.ch/iucc/rio.html>

Since its adoption five years ago at the 1992 Earth Summit in Rio de Janeiro, the United Nations Framework Convention on Climate Convention has been the centerpiece of the world-wide effort to combat global warming. It has also been one of the international community's most essential tools in the struggle for sustainable development. A great deal has been accomplished since Rio—but the most difficult decisions still lie ahead.

THE ENVIRONMENTAL CHALLENGE

Swedish scientist Svante Arrhenius warned that carbon dioxide emissions could lead to global warming as long ago as 1898. But it was not until the 1970s that scientists' growing understanding of the earth-atmosphere system brought this previously obscure scientific field to wider attention.

To give policymakers and the general public a better insight into what researchers were learning, the UN Environment Programme and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) in 1988. The IPCC was given a mandate to assess the state of existing knowledge about the climate system and climate change; the environmental, economic, and social impacts of climate change; and the possible response strategies.

The IPCC released its First Assessment Report in 1990. Approved after a painstaking peer review by hundreds of leading scientists and experts, the Report confirmed the scientific basis for climate change. It had a powerful effect on both policy-makers and the general public and strongly influenced negotiations on the Climate Change Convention.

* * *

TOWARDS A CONVENTION

In response to growing scientific understanding, a series of intergovernmental conferences focusing on climate change were held in the late 1980s and early 1990s. In 1990, the Second World Climate Conference called for a framework treaty on climate change.

Sponsored by WMO, UNEP and other international organizations, this conference featured negotiations and ministerial-level discussions among 137 states plus the European Community.

The final declaration, adopted after hard bargaining, did not specify any international targets for reducing emissions. However, it did support a number of principles later included in the Climate Change Convention. These were climate change as a “common concern of humankind”, the importance of equity, the “common but differentiated responsibilities” of countries at different levels of development, sustainable development, and the precautionary principle.

Meanwhile, the general public was starting to react. Although not clearly attributable to climate change, heat waves and record storms in the U.S. and elsewhere led to a series of press reports about climate change and its expected impacts. The high tide of environmental sentiment plus the 1985 discovery of the Antarctic ozone “hole” (which is not directly related to climate change) further stoked the public’s concern.

Then, in December 1990, the UN General Assembly approved the start of treaty negotiations. The Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC/FCCC) met for five sessions between February 1991 and May 1992. Facing a strict deadline—the June 1992 Rio Earth Summit—negotiators from 150 countries finalized the Convention in just 15 months. It was adopted in New York on 9 May 1992 and opened for signature several weeks later in Rio.

The new Convention established a process for responding to climate change over the decades to come. In particular, it set up a system whereby governments report information on their national greenhouse gas emissions and climate change strategies; this information is reviewed on a regular basis in order to track the Convention’s progress. In addition, developed countries agreed to promote the transfer of funding and technology to help developing countries respond to climate change. They also committed themselves to taking measures aimed at returning their greenhouse gas emissions to 1990 levels by the year 2000.

The Convention entered into force on 21 March 1994 and today boasts some 165 Parties.

THE POLITICAL CHALLENGE

Both climate change damages and policies to minimize damages have enormous environmental and economic implications. The costs of climate change will vary widely from country to country. Developed countries are responsible for over two thirds of past emissions and some 75% of current emissions, but they are best positioned to protect themselves from damage. Developing countries tend to have low per-capita emissions, are in great need of economic development, and are more vulnerable to climate change impacts.

These differences have helped to shape the positions that governments take in international talks. The key players are:

The European Union. In response to environmental concerns, the EU (or, legally, the EC) played a leading role in launching the Convention negotiations. In general, the EU supported binding targets and timetables for emissions reduction; other countries did not agree so targets and timetables were not included in the treaty. It also supported allowing countries to adhere to joint targets. This now affects the internal discussion between the EU’s poorer members, who argue for higher emissions quotas within any future overall EU target, and the richer members, who would have to reduce their emissions further to compensate for this.

The JUSSCANZ countries. The non-EU developed countries include Japan, the US, Switzerland, Canada, Australia, New Zealand, and Norway. Many members of this group tend to share a concern for a more “flexible” approach to limiting greenhouse gas emissions. The U.S. in particular played a key role in the drafting of Article 4.2 on developed country commitments to limit emissions. Despite the “creative ambiguity” of the final text, it is almost universally interpreted as committing developed countries to making a serious effort to return their greenhouse gas emissions to 1990 levels by the year 2000. When the Clinton administration came into office in 1993, it softened the U.S. line and explicitly accepted the U.S. intention to pursue stabilization.

Countries with economies in transition The industrialized countries of Central and Eastern Europe and the former Soviet Union are important emitters of greenhouse gases. However, due to the economic slump following the end of communism they will likely succeed in keeping their emissions below 1990 levels through the year 2000. Afterwards, however, their economies and emissions levels are expected to revive.

The Group of 77 and China. Developing countries work through the G77 to develop common positions on emissions-reduction commitments and financial and technological transfers. However, the members of the G77 often have widely differing interests. For example, China and others have enormous coal resources that are vital to their economic development. African countries tend to focus on vulnerability and impacts. Many of the Asian “tigers” are concerned about the possibility of being next in line for emissions-reduction targets. Countries with large forestry sectors are sensitive to the implications of treating forests as carbon sinks. * * *

The Association of Small Island States. The AOSIS countries played a prominent role in galvanizing support for the Convention. They are particularly vulnerable to the risk of sea-level rise and therefore strongly support rapid action to reduce emissions.

The Organization of Petroleum Exporting Countries. OPEC members tend to be concerned about the likely impact on their economies if other countries reduce their use of oil. Saudi Arabia, Kuwait, and others have emphasized the existence of scientific uncertainty and argued that the Convention process should move forward cautiously.

Business. The first business groups to attend the climate talks as observers represented energy-intensive firms concerned about the negative economic implications of a Convention. More recently, other business sectors have started to follow the process more closely, including the insurance sector, which sees itself as vulnerable to increased storms and other possible climate change impacts, and clean energy firms, which see market opportunities.

Environmentalists. Green groups have been active in the climate change arena since the very beginning. Many are active in lobbying delegates and the media and produce a widely read newsletter called “ECO” during international meetings. The majority are from developed countries although constant efforts are made to expand the participation of NGOs from developing countries.

Local authorities. Many cities around the world have launched climate change plans that are even more ambitious than those of their national governments. Urban governments

are critically important because of their role in managing energy utilities, public transport, and other emissions-producing activities of the public sector. Mayors and other urban leaders have joined together in an association to present their views at Convention-related meetings.

RECENT SCIENTIFIC AND POLITICAL DEVELOPMENTS

After the Convention was adopted in Rio, the Intergovernmental Negotiating Committee that drafted it continued its preparatory work, meeting for another six sessions to discuss matters relating to commitments, arrangements for the financial mechanism, technical and financial support to developing countries, and procedural and institutional matters. The INC was dissolved after its 11th and final session in February 1995, and the Conference of the Parties (COP) became the Convention's ultimate authority. The COP held its first session in Berlin from 28 March–7 April 1995.

The Convention required COP-1 to review whether the commitment of developed countries to take measures aimed at returning their emissions to 1990 levels by the year 2000 was adequate for meeting the Convention's objective. The Parties agreed that new commitments were indeed needed for the post-2000 period. They established the Ad hoc Group on the Berlin Mandate (AGBM) to draft "a protocol or another legal instrument" for adoption at COP-3 in 1997.

The Berlin Mandate process is addressing all greenhouse gases. It is considering setting quantified objectives for limiting and reducing emissions within specified time-frames such as 2005, 2010, and 2020. It is not to introduce any new commitments for developing countries.

The IPCC's Second Assessment Report was adopted soon after the Berlin meeting, in December 1995. The Report was written and reviewed by some 2,000 scientists and experts world-wide. It was soon widely known for concluding that "the balance of evidence suggests that there is a discernible human influence on global climate." However, the Report did much more, for example confirming the availability of so-called no-regrets options and other cost-effective strategies for combating climate change.

The COP held its second session from 8-19 July 1996. Ministers released a declaration stressing the need to accelerate talks on how to strengthen the Climate Change Convention and endorsed the Second Assessment Report "as currently the most comprehensive and authoritative assessment of the science of climate change, its impacts and response options now available." They further stated that the Report "should provide a scientific basis for urgently strengthening action at the global, regional and national levels, particularly action by Annex I (industrialized) countries to limit and reduce emissions of greenhouse gases. . . ."

COP-3 will be held from 1-12 December 1997 in Kyoto, Japan. It is expected to adopt new commitments requiring developed countries to reduce their greenhouse gas emissions after the year 2000.

WHAT COUNTRIES ARE DOING TO CONTROL EMISSIONS

The sharing of information by governments is central to how the Climate Change Convention works. Parties must therefore submit "national communications" to the Conference of the Parties (COP) on a regular basis. This information about national greenhouse gas emissions, international cooperation, and national activities is reviewed periodically so that the Parties can track the Convention's effectiveness and draw lessons for future national and global action.

The 1996 review of national communications from developed countries (developing countries will start making their initial submissions in 1997) reveals that carbon-dioxide

emissions continue to rise in most of them. Comparing the data from 1990 inventories with projections for the year 2000 shows carbon-dioxide emissions rising over the decade if additional measures are not adopted. The major exceptions are the countries with economies in transition. For methane, all but three Parties project that their emissions will decline or stabilize over the decade. Nitrous-oxide trends are not clear, although some countries project major decreases.

The data also shows that carbon dioxide accounts for 80.5% of total greenhouse gas emissions from developed countries. Fuel combustion is confirmed as the most important source of CO₂. With the 33 countries included accounting for around 63% of the global CO₂ emissions in 1990, this seems to confirm carbon dioxide as the most important greenhouse gas resulting from human activities.

Developed countries are exploring a wide range of climate change policies and measures. The policies governments choose are generally dictated by national circumstances such as political structure and the overall economic situation. Many are “no-regrets” measures that have environmental or economic benefits irrespective of climate change concerns. In addition to regulatory and economic instruments, Parties are promoting voluntary agreements with industry and public authorities. Other measures involve research and development, and information and education.

Specific measures are being used for most of the major economic sectors. Policies for the energy sector (the largest source of emissions for many countries) include switching to low- or no-carbon fuels, reforming market regulations to spur competition, and removing subsidies on coal. Industry-related policies include voluntary arrangements, standards, financial incentives, and liberalized energy prices.

The focus in the residential, commercial, and institutional sector is on energy-efficiency standards for new buildings, higher energy prices, and public information campaigns. Agricultural measures include reducing herd sizes and fertilizer use and improving waste management. While most governments project an expansion of the transportation sector, relatively few measures for controlling its emissions were reported.

PREPARING FOR KYOTO

The Convention is an ongoing process dealing with such vital issues as the submission of information about national actions and the transfer of financial support to developing countries. But clearly the center of attention in 1997 will be the drafting of the Kyoto accord.

In the time remaining, it seems unlikely that all of the proposals now on the table can be worked out in detail. Some of the unfinished ideas about how to implement developed country commitments could form the basis for continuing negotiations after 1997. What is needed now is an agreement that is strong and convincing enough to give investors and consumers the right economic signals. This would make the Kyoto agreement a success and open the way to further action in the years to come.

NOTES

1. China and other developing Asian countries, will likely pose especially difficult problems as the international community tries to stabilize greenhouse emissions. A recent report by the Energy Information Administration, U.S. Department of Energy projects that energy demand in Asia will increase by 124% between 1995 and 2015. International Energy

Outlook, 1996 (EIA). How can or should the international community respond to this information?

2. As UNEP notes, most of the developed countries, committed themselves to stabilize their emissions of greenhouse gases to 1990 levels by the year 2000. But as the following GAO report suggests not many of these countries are likely to meet that goal. What mechanisms might be used in international standards?

**GLOBAL WARMING: DIFFICULTIES ASSESSING COUNTRIES'
PROGRESS STABILIZING EMISSIONS OF GREENHOUSE GASES**
GAO/RCED-96-188 (Sept. 1996)

The United Nations Framework Convention on Climate Change entered into force on March 21, 1994. As of June 1996, 159 countries had ratified the Convention. The Convention's ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system from human activities." To achieve this goal, the Convention established different types of goals and commitments for developed and developing countries. Under the Convention, all parties are to do the following:

- Prepare and communicate to the Conference of the Parties inventories of greenhouse gas emissions caused by human activity using comparable methodologies.
- Develop and communicate to the Conference of the Parties programs to mitigate the effects of greenhouse gases and measures the countries might take to adapt to climate change.
- Cooperate in the transfer of technology addressing greenhouse gas emissions in all relevant sectors of the economy.
- Promote sustainable management of greenhouse gas sinks and reservoirs.
- Cooperate in preparing for adaptation to the impacts of climate change.
- Integrate considerations of climate change with other policies.
- Conduct research to reduce the uncertainties about scientific knowledge of climate change, the effects of the phenomenon, and the effectiveness of responses to it.
- Exchange information on matters such as technology and the economic consequences of actions covered by the Convention.

In addition to the above commitments, the Convention required developed countries and other parties included in Annex I* of the Convention to do the following:

- Adopt national policies and take corresponding measures to mitigate climate change with the aim of returning human-induced emissions of greenhouse gases to 1990 levels by the year 2000 and by protecting and enhancing greenhouse gas sinks and reservoirs.

[Editor's note: There are 36 Annex I countries as follows: Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Poland, Romania, Russian Federation, Slovak Republic, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland and the United States of America. Of these, Belarus, Turkey, and Ukraine have not yet ratified the Convention.]

- Communicate, within 6 months of the Convention's entry into force and periodically thereafter, detailed information on policies and measures to limit greenhouse emissions, as well as on the resulting projections of greenhouse gas emissions and removals by sinks.
- Coordinate as appropriate with other parties the relevant economic and administrative instruments developed to achieve the objective of the Convention.
- Identify and periodically review policies and practices that encourage activities that lead to greater levels of human-induced emissions of greenhouse gases that would otherwise occur.

The Annex I countries' progress in meeting the Convention's goal to reduce greenhouse gas emissions cannot be fully assessed because the emissions data are incomplete, unreliable, and inconsistent. For example, many of the national plans of Annex I countries do not include the 1990 inventory levels of projections to 2000 for all greenhouse gases. Although the emissions data for carbon dioxide are considered to have a high level of certainty, the range of uncertainty for Canada's reported emissions data on methane was plus or minus 30 percent at a 90 percent confidence level and for nitrous oxide emissions, plus or minus 40 percent at an 85 percent confidence level. Such problems limit the completeness and comparability of the inventories and projections and therefore the ability to assess progress against the Convention's goal. The problems generally result from a lack of specific reporting requirements by the Convention and from limitations in the ability to qualify certain greenhouse gas emissions.

Although the currently available emissions data prevent a complete assessment of countries' progress in meeting the Convention's goal, projections by energy forecasting agencies of carbon dioxide emission from fossil fuel use—which is the largest single category of greenhouse gas emissions—indicate that few Annex I countries will likely be able to return emissions to 1990 levels by 2000. Of the major developed countries only Germany and the United Kingdom appear likely to reduce carbon emission to 1990 levels by the year 2000. Other major developed countries—including Canada, Italy, Japan, and the United States—will probably not reach the goal. A few other Annex I countries in eastern Europe, such as the Czech Republic, may be able to meet the Convention goal.

The projections by the Annex I countries themselves indicate that only of the 24 countries that provided point estimates of carbon dioxide emissions in 2000 project that they can hold emission near or below the levels. For the remaining countries, the increases over the 1990 inventory levels ranged from 1.7 percent to 28.8 percent.

* * *

The projections from other organizations also indicate that few countries will be able to stabilize carbon dioxide emissions. For example, the Energy Information Administration's May 1996 International Energy Outlook forecasts that carbon dioxide emissions from energy consumption will increase for most of the Annex I countries from 1990 to 2000. Specifically, the agency projects that carbon dioxide emissions will increase 11 percent in the United States, 21 percent in Japan, 18 percent in Canada, and 6 percent in OECD Europe. The International Energy Agency (IEA) also projects increases in carbon dioxide emissions between 1990 and 2000 for Annex I countries. In its 1994 Review of Energy Policies of IEA Countries, published in July 1995, this agency forecasts increases in energy-related carbon dioxide of 10 percent for the United States, 13 percent for Canada, and 8 percent for Europe.

* * *

NOTES

1. The U.S. Congress has shown sporadic interest in global climate change issues. In 1987, Congress enacted the Global Climate Protection Act, 15 U.S.C. § 2901 note, 101 Stat. 1407. The principal purposes of this legislation was to “(1) increase worldwide understanding of the greenhouse effect and its environmental consequences; (2) foster cooperation among nations to develop more extensive and coordinates scientific research efforts with respect to the greenhouse effect; and (3) identify technologies and activities to limit mankind’s adverse effect on the global climate * * *. *Id.* at 101 Stat. 2408. Three years later, in 1990, Congress passed the Global Change Research Act, establishing a Global Change Research Office, and further promoting research on global change issues in the United States and abroad. 104 Stat. 3096. More recently, in 1996, Congress established a Global Climate Change Response Fund “to act as a mechanism for United States contributions to assist global efforts in mitigating and adapting to global climate change.” 42 U.S.C. § 13388(a). Money deposited into this fund is to be used solely to support financial mechanism negotiated under the Framework Convention. *Id.* at 13388(c). Finally, in 1997, Congress established a global change program within the Department of Agriculture as a “focal point for coordinating all issues of climate change.” 7 U.S.C. § 6701(a).

2. Current efforts to control greenhouse gas emissions are not likely to achieve even the modest goals set by the Framework Convention. A number of options further reduce greenhouse emissions including carbon taxes, tax incentives, marketable permits, and regulatory standards. In addition, research on and development of alternative energy sources that do not rely on fossil fuels may become an important part of the solution. *See* CHANGING BY DESIGNS: STEPS TO REDUCE GREENHOUSE CASES, Office of Technology Assessment, U.S. Congress, OTA-0-483 (1991).

3. In October, 1993, President Clinton announced a Climate Change Action Plan designed to promote voluntary reductions in greenhouse gas emission, and to promote incentive-based programs. *See* <http://www.gcrio.org/USCCAP/>. These programs focus on four principal action areas as described below:

(a) *Energy Demand Actions*: Because fossil fuel energy consumption is responsible for 85% of greenhouse gas emissions. “Investing in energy efficiency is the single most cost-effective way to reduce CO₂ emissions.” [Http://www.gcrio.org/USCCAP/energyd.html](http://www.gcrio.org/USCCAP/energyd.html). Among the programs in this category are EPA’s *Green Lights* program which encourages the installation of highly efficient lighting systems in commercial buildings, and the *Energy Star Buildings* and *Rebuild America* programs, which promote energy efficient building construction and renovation.

(b) *Energy Actions*: Transportation currently produces over 32% of the CO₂ emissions in the United States, and is expected to be the fastest growing source of CO₂ emissions through the year 2000. To address this problem, the Climate Change Action Plan proposes actions that will discourage vehicle use and promote the development of more efficient technologies and cleaner fuels. Interestingly, however, the Clinton Administration has not yet proposed raising the CAFE standards to increase the fuel efficiency for automobiles. *See* <http://www.gcrio.org/USCCAP/trans.html>.

(c) *Energy Supply Actions*: Most CO₂ emissions come from burning fossil fuels, especially coal. The Climate Change Action Plan seeks to reduce these emissions by promoting renewable energy sources, and natural gas usage. Although natural gas is a fossil fuel it emits far less CO₂ per unit of energy than coal or oil. The Plan also promotes increasing the efficiency of energy distribution, primarily through the establishment of standards for high efficiency electricity transformers. See <http://www.gcrio.org/USCCAP/energys.html>.

(d) *Forestry Actions*: CO₂ emission occur when the carbon stored in trees and other organic products is harvested and burned for energy. The Climate Change Action Plan promotes efforts to protect the carbon sequestered in these carbon sinks through better forestry management, tree planting initiatives and expanded paper recycling programs. See <http://www.gcrio.org/USCCAP/forestry.html>.

The Kyoto Protocol was signed on December 10, 1997, in Kyoto, Japan. Set forth below is a brief summary of its provisions by the U.S. State Department.

THE KYOTO PROTOCOL ON CLIMATE CHANGE A FACT SHEET RELEASED BY THE U.S. DEPARTMENT OF STATE

<http://www.usia.gov/topical/global/envIRON/fact0198.htm>

January 15, 1998

BACKGROUND

At a conference held December 1 - 11 1997 in Kyoto, Japan, the Parties to the UN Framework Convention on Climate Change agreed to an historic Protocol to reduce greenhouse gas emissions by harnessing the forces of the global marketplace to protect the environment.

The Kyoto Protocol in key respects—including emission's targets and timetables for industrialized nations and market-based measures for meeting those targets—reflects proposals advanced by the United States. The Protocol makes a down payment on the meaningful participation of developing countries, but more needs to be done in this area. Securing meaningful developing country participation remains a core U.S. goal.

EMISSIONS TARGETS

A central feature of the Kyoto Protocol is a set of binding emissions targets for developed nations. The specific limits vary from country to country, though those for the key industrial powers of the European Union, Japan, and the United States [are] similar—8% below 1990 emissions levels for the EU, 7% for the U.S., 6% for Japan.

The framework for these emissions targets is based largely on U.S. proposals.

- **Emissions targets are to be reached over a five-year budget period as proposed by the U.S., rather than by a single year.** Allowing emissions to be averaged across a budget period increases flexibility by helping to smooth out short-term fluctuations in economic performance or weather, either of which could spike emissions in a particular year.
- **The first budget period will be the U.S. proposal of 2008 - 2012.** The Parties rejected proposals favored by others, including budget periods beginning as early as 2003, that were neither realistic nor achievable. Having a full decade before the start of

the binding period will allow more for U. S. companies to make the transition to greater energy efficiency and/or lower carbon technologies.

- **The emissions targets include all six major greenhouse gases.** The EU and Japan initially favored counting only three gases—carbon dioxide, methane, and nitrous oxide. Ensuring the inclusion of the additional gases (synthetic substitutes for ozone-depleting CFCs) that are highly potent and long-lasting in the atmosphere provides more comprehensive environmental protection and lends more certainty concerning the treatment of the additional gases.
- **Activities that absorb carbon, such as planting trees, will be offset against emissions targets.** The treatment of these so-called “sinks” was another controversial issue at Kyoto. Many countries wanted sinks to be excluded. The United States insisted that they be included in the interest of encouraging activities like afforestation and reforestation. Accounting for the role of forests is critical to a comprehensive and environmentally responsible approach to climate change. It also provides the private sector with low-cost opportunities to reduce emissions.

INTERNATIONAL EMISSIONS TRADING

The United States prevailed in securing acceptable [sic] of emissions trading among nations with emissions targets. This free market approach, pioneered in the U.S., will allow countries to seek out the cheapest emissions reductions, substantially lowering costs for the U.S. and others. Under an emissions trading regime, countries or companies can purchase less expensive emissions permits from countries that have more permits than they need (because they have met their targets with more to spare). Structured effectively, emissions trading can provide a powerful economic incentive to cut emissions while also allowing important flexibility for taking cost-effective actions. The Kyoto Protocol enshrines emissions trading. Rules and guidelines—in particular for verification, reporting and accountability—are to be worked out at the next meeting of the Parties at Buenos Aires in November 1998.

The inclusion of emissions trading in the Kyoto Protocol reflects an important decision to address climate change through the flexibility of market mechanisms. Led by the United States, the Conference rejected proposals to require all Parties with targets to impose specific mandatory measures, such as energy taxes. The United States also reached a conceptual agreement with a number of countries, including Australia, Canada, Japan New Zealand, Russia and Ukraine, to pursue an umbrella group to trade emissions permits. Such a trading group could further contribute to cost-effective solutions to this problem.

* * *

CLEAN DEVELOPMENT MECHANISM

Another important free market component of the Kyoto Protocol is the so-called “Clean Development Mechanism.” The CDM embraces the U.S. proposal for “joint implementation for credit” in developing countries. With the Clean Development Mechanism, developed countries will be able to use certified emissions reductions from project activities in developing countries to contribute to their compliance with greenhouse gas reduction targets. This Clean Development Mechanism will allow companies in the developed world to enter into cooperative projects to reduce emissions in the developing world—such as the construction of high-tech, environmentally sound power plants—for the benefit of both parties. The companies will be able to reduce emissions at lower costs than they could at home, while developing countries will be able to receive the kind of technology that can allow them to grow

more sustainably. The CDM will certify and score projects. The CDM can also allow developing countries to bring projects forward in circumstances where there is no immediate developed country partner.

Under the Clean Development Mechanism, companies can choose to make investments in projects or to buy emissions reductions. In addition, Parties will ensure that a small portion of proceeds be used to help particularly vulnerable developing countries, such as island states, adapt to the environmental consequences of climate change. Importantly, certified emissions reductions achieved starting in the year 2000 can count toward compliance with the first budget period. This means that private companies in the developed world will be able to benefit from taking early action.

DEVELOPING COUNTRIES

Various Protocol provisions, taken together, represent a down payment on developing country participation in efforts to reduce greenhouse gas emissions. Developing countries will be engaged through the Clean Development Mechanism, noted above.

The Protocol advances the implementation by all Parties of Article 4.1 commitments under the 1992 Framework Convention on Climate Change. For example, the Protocol identifies various sectors (including the energy, transport, and industry sectors as well as agriculture, forestry, and waste management) in which actions should be considered in developing national programs to combat climate change and provides for more specific reporting on actions taken. While the Conference rejected a proposal to create a new category of nations that would voluntarily assume binding emissions targets, developing countries may as a prerequisite for engaging in emission trading still do so through amendment to the annex of the Protocol that lists countries with targets. Securing meaningful participation from key developing countries remains a priority for the United States. The Administration has stated that without such participation, it will not submit the Kyoto Protocol to the Senate for advice and consent to ratification.

MILITARY EMISSIONS

The Kyoto Protocol achieves the objectives identified by the Department of Defense where international agreement was necessary to protect U.S. military operations. Emissions from “bunker” fuels (for international maritime or aviation use) are exempted from emissions limits. Emissions from multilateral operations pursuant to the United Nations Charter are exempted from emissions limits. This includes not only multilateral operations expressly authorized by the UN Security Council (such as Desert Storm, Bosnia, Somalia) but also multilateral operations not expressly authorized that are nonetheless pursuant to the UN Charter, such as Grenada. Countries may decide, among themselves, how to account for emissions relating to multilateral operations (for example, U.S. training in another NATO country). This provision avoids the need to use emissions trading to allocate such emissions.

COMPLIANCE AND ENFORCEMENT

The Protocol contains several provisions intended to promote compliance. These include requirements related to measurement of greenhouse gases, reporting, and review of implementation. The Protocol also contains certain consequences for failure to meet obligations. For example, as a result of a U.S.-proposed provision, a Party not in compliance with its measurement and reporting requirements cannot receive credit for joint implementation projects. Effective procedures and a mechanism to determine and address non-compliance are to be decided at a later meeting. For both environmental and competitiveness reasons, the

United States will be working on proposals to strengthen the compliance and enforcement regime under the Protocol.

ENTRY INTO FORCE

The Kyoto Protocol will be open for signature in March 1998. To enter into force, it must be ratified by at least 55 countries, accounting for at least 55 percent of the total 1990 carbon dioxide emissions of developed countries. U.S. ratification will require the advice and consent of the Senate.

NOTES

1. The State Department summary notes that “[s]ecuring meaningful participation from developing countries remains a priority for the United States”, and that “without such participation, [the Administration] will not submit the Kyoto Protocol to the Senate for advice and consent to ratification.” Why? What American interests are served by securing the meaningful participation of developing countries? Are American interests any different from the interests of other developed countries in this respect?

2. The key obligations established under the Protocol are set forth in Article 3 of the Protocol. Article 3 establishes commitments for greenhouse gas emissions for each of the 49 countries listed in Annex B. Those commitments are based on 1990 emission levels and range from 108% for Australia, to 92% for 27 European countries. All of the Annex B countries are supposed to set a goal of reducing greenhouse gas emissions by 5% below 1990 levels in the commitment period 2008-2012, and of making “demonstrable progress in achieving its commitments under the Protocol by 2005. Kyoto Protocol, Article 3, §§1, 2.

3. Under Article 5 of the Protocol, [e]ach Party included in Annex I [of the United Nations Framework Convention on Climate Change (which includes most developed countries)], shall have in place, no later than one year prior to the start of the first commitment period, a national system for the estimation of anthropogenic [man-made] emissions by sources and removal by sinks of all greenhouse gases not controlled by the Montreal Protocol [relating to ozone depletion].”

4. The CDM program, described in the State Department summary, is provided for in Article 12 of the Protocol. Can you think of examples as to how the CDM program is supposed to work? The State Department suggests, for example, that someone in a developed country might construct a “high -tech, environmentally sound power plant” in a developing country, thereby allowing the developed country to receiving credit toward its Article 3 emission goals. What incentive does a private developer in an Annex I country have to participate in this program? What incentive systems might be established to promote participation?

5. Carbon taxes have been introduced in a number of industrialized countries including Finland, the Netherlands, Norway and Sweden. As the following article suggests, many economists believe that carbon taxes offer an efficient means for reducing carbon dioxide emissions. As you read this excerpt, consider the desirability of coordinating a carbon tax program internationally, and ways in which equities in meeting CO₂ goals can be achieved among the developed and developing countries.

THE ECONOMICS OF CARBON TAXES
UNITED NATIONS ENVIRONMENT PROGRAM
<http://www.unep.ch/iucc/fs230.html>

A tax on the carbon content of oil, coal, and gas would discourage fossil-fuel use and so reduce carbon dioxide (CO₂) emissions. Carbon taxes have already been introduced by a number of industrialized countries, including Finland, the Netherlands, Norway, and Sweden. Detailed proposals are also being debated in Denmark and Switzerland, and a proposal by the European Commission for a community-wide carbon tax is being considered by member states.

Many economists believe that a carbon tax would achieve any given reduction in CO₂ emissions at minimum cost . . . Although there are other ways to reduce carbon dioxide emissions, they can be less economically efficient than are carbon taxes. A tax just on petrol, for example, would reduce the use of oil, but much of the reduction would be negated as energy users switch over to coal and natural gas, which also emit carbon dioxide. It would also not affect the use of heating oil and other petroleum products. As for energy efficiency standards and other regulatory alternatives, because they would not raise the price of emitting carbon, they would neither discourage energy use nor provide electricity generators with incentives to move away from carbon-intensive fuels. A carbon tax, on the other hand, would give all users of fossil fuels the same incentive to reduce carbon emissions.

But the tax must be well designed and administered. Because different fossil fuels have different carbon contents and can often be substituted for one another, it is unimportant to tax carbon content. While such a tax might seem awkward to apply, estimates of each fuel's carbon content could easily be used to translate the carbon tax into separate taxes on coal, oil, and natural gas. Since fossil fuels are already taxed in most countries, this would make the carbon tax easy to administer. Unfortunately, many of the national carbon tax programs already in existence are not well designed. In one nation's program, for example, the electricity industry is exempt from paying the carbon tax, and industrial companies pay the tax on the basis of their revenues, rather than on their energy use. These exceptions and exemptions have the effect of raising the country's overall cost of abating any given level of CO₂ emissions.

A carbon tax cannot guarantee how great the reduction in emissions will be. . . . The effect that a tax has on emissions depends on how energy users and suppliers respond to it. Their response would be difficult to predict in advance. Economists have made a range of estimates for the effect different carbon taxes would have. The firmest conclusion that emerges from their work is that the tax would have to be high—some US \$100 per ton of carbon—if it were to reduce emissions substantially in the long run. A US \$100 per-ton tax would raise the current price of crude oil (US \$20 per barrel) by about two thirds. The tax would have to be this high in part because economic growth will, in the absence of abatement policy, increase emissions over time. Hence, the tax would have to be raised every now and then to keep emissions levels stable. On the other hand, future technological innovations may reduce the cost of abatement in the very long run, allowing carbon taxes to be reduced.

But it can guarantee that the cost of abatement will not be excessive. Faced with a carbon tax of US \$100 per ton of carbon, individuals and firms would seek to avoid this penalty by spending up to—but not more than—US \$100 to abate a ton of carbon emissions. Quantitative emissions limits, on the other hand, would guarantee how much CO₂ is emitted, but not the price for achieving that level. Therefore, a quantitative limit on emissions could turn out to be too costly (higher, for example, than the damage avoided) or not costly enough. In many industrialized countries, CO₂ emissions are no higher today than they were in 1973 due to real

increases in the price of energy. If energy prices, always volatile and unpredictable, increase in the future, a given quantitative ceiling on emissions might be reachable without devoting any additional resources to abatement; if prices fall, the costs of achieving a given quantitative target could turn out to be much higher than expected. A key virtue of the carbon tax is that it fixes the incentive to abate emissions independently of energy price fluctuations (that is, a US \$100 tax provides a US \$100 incentive). In addition, the tax could be adjusted up or down if new scientific information becomes available about the damages caused by particular emissions levels.

A supplementary benefit is that a carbon tax would allow other, more distorting, taxes to be lowered, thus improving the economy's performance. A high carbon tax would raise substantial sums of money; one study estimates that a tax of US \$100 per ton would raise revenues equal to 3.4% of GNP in the U.S. and 1.1% of GNP in energy-efficient Japan. Such high sums would allow income and other taxes to be reduced, making the carbon tax revenue neutral (i.e. keeping the total tax burden unchanged). While taxes on income and savings distort economic decision-making by individuals and firms, a carbon tax actually reduces distortions in the economy. This contribution to economic performance needs to be factored in when calculating the true cost of an abatement policy based on a carbon tax.

The carbon tax is regressive, but other taxes and transfers can be adjusted to offset its negative impact on poorer households. Poor households tend to spend a greater percentage of their total income on energy than do rich ones. But the regressive nature of the carbon tax can be neutralized by indexing transfer payments to inflation (as is already done in many countries) and by increasing the personal deductions households can take on their income taxes. At the same time, it should be recognized that other policies for abating net greenhouse gas emissions would also impact the distribution of income, even if less transparently than would a carbon tax. For example, energy efficiency standards would hit the poor hardest because the poor tend to buy cheaper, less-energy-efficient appliances than do richer households.

The most cost-efficient carbon tax would be one that is comprehensive and internationally coordinated. A one-ton reduction in carbon emissions has the same benefit as a one-ton increase in the amount of carbon absorbed by trees or other "sinks". The most efficient policy, then, would be to offer a subsidy for sink enhancement that is equivalent to the tax on CO₂ emissions. In addition, taxes should also be imposed on other greenhouse gases; such taxes would be calculated according to the global warming potential of each particular gas. The U.S., for example, taxes chlorofluorocarbons (CFCs), and a few other countries are considering doing the same. Such taxes were set at the same level in every country, the total cost of reducing greenhouse gas emissions would be reduced (fact sheet 228). There would be no need for such an international tax to be imposed by an international agency, an arrangement many countries would anyway not accept. Instead, as exemplified by the current proposal by the European Community, a standard carbon tax could be coordinated internationally but administered nationally.

CLIMATE CHANGE AND ITS CONSEQUENCES

RESOURCES 10-13 (Summer, 1996)

The Intergovernmental Panel on Climate Change, an international group of scientists, economists, and decision theorists convened by the UN, recently completed its second assessment of the current state of knowledge regarding human-induced changes in the

Earth's climate and possible consequences. The goal of stabilizing atmospheric-greenhouse gas concentrations—which the nations of the world agreed to under the 1992 Framework Convention on Climate Change, and which the IPCC is charged with helping to effect—is difficult, touching as it does on national interests in varying ways. Thus controversy, including the allegation that politics has tainted the science, has arisen over the IPCC's latest findings (just as it did after the panel released its first report in 1990).

In this article, however, we focus on the substance of the reports produced, with particular emphasis on issues related to the use of fossil fuel and emissions of carbon dioxide—the greenhouse gas that contributes most to climate change. The three groups assessed the available information on (1) effects of human activity on climate conditions through modifications of the atmosphere; (2) potential impacts of this climate change, along with the technical potential for mitigating and adapting to it; and (3) socioeconomic consequences of climate change, including human responses to potential impacts.

HUMAN IMPACTS ON CLIMATE: STATE OF THE SCIENCE

A striking feature of the new IPCC assessment is the conclusion by Working Group I that a human cause for the climate change now observed is likely, not just possible—a much stronger conclusion than the one reached in the first assessment. Five years ago, the IPCC stated that although all signs pointed to human-induced climate change, crucial evidence for cause and effect was not yet available. The evidence then available indicated that atmospheric greenhouse gas concentrations had increased in the previous 130 years and that the global climate had warmed; however, when complex computer simulations of climate processes were applied retrospectively, they predicated a larger warming than had actually occurred and did not adequately represent climate changes in different regions and at different altitudes.

The latest generation of models can now replicate the past with greater realism. In particular, new models include analysis of the cooling effect of aerosols—tiny particles—in the air formed from sulfur emitted during the burning of fossil fuels.

By including in their analyses the cooling effects of aerosols and stratospheric ozone depletion, most of the latest studies have detected a significant climate change and, in the conclusion reached by Working Group I, show that the observed warming trend is “unlikely to be entirely natural in origin.” The balance of evidence suggests a “discernible human influence on global climate.”

Despite recent improvements, climate models are still unable to project the details of climate change on a regional scale, complicating assessment of potential impacts and response options. A further complication is the possibility that future climate change will be neither gradual nor continuous, but abrupt and surprising, as Working Groups I and II caution repeatedly.

POTENTIAL NATURAL IMPACTS

What constitutes a “dangerous” level of interference with the climate is a complicated question. In its latest assessment, the IPCC addresses many impacts of climate change, including the effects on agriculture, forestry, terrestrial and marine ecosystems, hydrology and water resource management, human health, human infrastructure, and financial services. While the potential impacts of climate change are broad, some aspects of human society are more sensitive than others. In particular, more highly managed systems like agriculture, where skills and resources for investing in adaptation are available, may be less sensitive than less

managed systems like wilderness areas. However, some of the adverse effects of climate change may fall disproportionately on poorer, less-adaptive parts of the world.

The IPCC puts greater emphasis than it has in the past on the potential adverse effects of climate change on human health. Periods of sustained higher temperatures not only could increase mortality but also foster the spread of disease through greater water contamination and a wider geographic dispersion of disease-carrying organisms such as mosquitoes.

* * *

Working Group II also points out that damage to ecosystems and human structures arising from such other causes as population growth, industrial expansion, and changes in land use could combine with effects of climate change to push already stressed systems “over the edge.” Particularly if climate change were very rapid, damage could be severe and long-lived, perhaps irreversible. However, such rapid change may be unlikely and is difficult to predict.

SOCIOECONOMIC CONSEQUENCES

Decisionmakers contemplating public policies to deal with climate change need to understand the socioeconomic consequences that might follow from the physical and biological impacts of climate change.

Uncertainties about these consequences are compounded not only by remaining scientific questions but also by diverse views about how socioeconomic consequences should be defined and measured.

The latest IPCC assessment notes the practical limits of conventional benefit-cost analysis as applied to climate change issues. Climate change involves risks of natural impacts that would be very long term, spanning multiple generations. Moreover, these impacts could be very large in scale and not so readily offset by substituting other capital investments. Such risks are not easily incorporated into conventional benefit-cost analysis.

Nevertheless, Working Group III rightly asserts that an economic benefit-cost assessment can help guide decisionmaking when coupled with an assessment of other factors. These include impacts that are not easily monetized and the distributional effects of climate change within and across generations.

In reviewing the available evidence on the economic impacts of climate change, Working Group III looked at a number of potential effects. These include impacts on agriculture and forestry, effects on water supplies, damages from sea-level rise to coastal areas and expenditures to protect them, increased mortality risks, effects on fisheries and wetlands, and effects of changes in conventional air and water pollutants.

* * *

Aggregate damage estimates under these assumptions, expressed as a percentage of GDP to provide a sense of scale, tend to cluster around 1 to 1.5 percent for advanced industrial economies and 2 to 9 percent for developing countries. For some individual countries—say, small island states subject to flooding from sea-level—substantially higher costs could be incurred. Clearly, a number of thorny issues related to adaptive capacity and equity lie beyond estimates of aggregate damages.

The range of estimates for individual types of damage is wide, and the assessment recognizes the possibility of benefits, such as a longer growing season in some locations (leaving aside the costs of adjusting to climate change). Moreover, all damage figures are point estimates, lacking probability ranges or confidence intervals, and in many cases the estimates are simply educated guesses.

EFFECTIVENESS AND COST OF RESPONSE OPTIONS

Emission of CO₂—almost all generated by burning fossil fuel—account for about two-thirds of all enhanced heat trapping by greenhouse gases. Greater efficiency in the conversion and use of energy would obviously slow emissions, but no meeting of the minds exists on what it would cost to increase energy efficiency. Indeed long-standing differences of opinion about the cost enter into the IPCC's debate over the cost of reducing greenhouse gas emissions.

Some analyses reviewed by the IPCC indicate that decreases in energy use of 10 to 30 percent can be achieved at low or even negative cost by widespread adoption of technologies that people do not use now because of such market barriers as lack of information, uncertainty about product performance or lifetime costs, high up-front costs, the distorting effect of energy subsidies, and the "chicken and egg" problem created by low initial purchase volume and high initial price. By reducing these barriers, the argument goes, government policies could reduce greenhouse gas emissions very cheaply.

Economists accept the idea that energy and other markets do not always work effectively, which certainly is the case in many countries. But many economists remain skeptical that the apparent lack of interest in more energy-efficient products necessarily is a market failure, citing other explanatory factors such as customer dissatisfaction with some product attribute that overwhelms consideration of its energy efficiency.

Accordingly, some of the analysts whose studies Working Group III surveyed do not believe barriers to widespread adoption of technologies are a major problem, at least in advanced economies where markets generally work, or that their elimination offers a truly cost-effective way of lowering mitigation costs. Thus their estimates of these costs are often higher than the technological state of the art would imply. For example, these latter analyses suggest that the cost to OECD countries of stabilizing carbon dioxide emissions at 1990 levels over the next several decades could range from -0.5 percent (a small new increase in GDP) to as much as 2 percent of GDP. (In evaluating these estimates, it is important to keep in mind the fact that GDP is not an accurate measure of social well-being.)

Moreover, these estimates tend to assume use of the most cost-effective emissions control policies, such as carbon taxes or emissions trading. If the policies put in place were actually less cost-effective, the estimated economic burden would increase.

Regardless of one's position in this debate, an important conclusion to arise from Working Group III's review is that the total costs of meeting a long-term target for reducing greenhouse gas concentrations in the atmosphere may be reduced substantially by stretching out the time period of emission reductions and providing emission sources with flexibility in the timing of reductions. Such flexibility could cushion abatement costs by reducing premature obsolescence of existing capital and permitting greater development and deployment of new, efficient technologies.

With regard to the eventual necessity for *global* participation in curbing greenhouse gas emissions, the IPCC notes the tension between that ideal and the need to respect the economic development priorities of the world's lower-income countries. Yet by meeting those priorities, poorer countries might expand their capacity to cope with climate change stresses, in addition to raising their living standards.

If fairness and implementation issues can be resolved, the IPCC points out that significant opportunities exist for international cooperation to, lower the costs of emission reductions. These opportunities include "joint implementation" projects in which richer countries make investments in reducing emissions in poorer countries. Properly structured, such projects can

convey tangible economic and environmental benefits to recipient countries while lowering the total costs of greenhouse gas emission reductions.

* * *

FINAL COMMENTS

Based on the insights, information, and findings of the IPCC's second assessment, it is now much more difficult to argue that human activities are not changing the climate. It is also now easier to argue that the impacts of climate change may be substantial, surprising, and unfair.

Unfortunately, the continuing uncertainties about the scale and nature of climate change, its consequences, and the costs of response make it difficult to specify a long-term plan of action at this time. Legitimate debate continues about what constitutes—and best to avoid—a “dangerous” interference with the climate system.

For our part, we believe that the latest IPCC assessment justifies some degree of policy intervention that goes beyond actions to improve economic efficiency *without* reference to climate change, although neither the United States nor the other industrialized nations have yet to exhaust all opportunities for these “no-regrets” actions. While the potential risks are difficult to quantify, the IPCC assessment strongly suggests that they are not zero. Given that society is not impervious to risks, some anticipatory efforts to reduce threats as well as efforts to improve the understanding of their magnitude are called for.

The task is not easy. The second assessment under-scores the challenge of understanding and responding to the ecological and socioeconomic aspects of climate change and other closely intertwined global problems, as well as the need for further understanding of how the climate is affected by human activities. Climate scientists need to focus on the regional manifestations of climate change and the variability of these changes; impact studies must become more quantitative and effective, adaptations need to be better identified, and economists must extend and supplement their tools for assessing the consequences of global change and the costs of policy responses.

The opportunities, as well as the needs, for new approaches in these fields are substantial. To reap these opportunities, governments and other sources of research funding should maintain or increase their budgets for climate change analysis, and a greater share of future research budgets should be allocated to ecological and socioeconomic research.

NOTE

The Intergovernmental Panel on Climate Change was established in 1988 by the World Meteorological Association and the United Nations Environmental Programme to assess the most up-to-date scientific, technical, and socio-economic research in the field of climate change. Further information about the IPCC is available at its World Wide Web site: <http://www.unep.ch/ipcc/>.

15 INDOOR AIR POLLUTION

The following introduction to indoor air pollution is found at the EPA's indoor air quality internet site. As the following materials suggest, the internet is a good source of information for this evolving area of law.

AN INTRODUCTION TO INDOOR AIR QUALITY

<http://www.epa.gov/iaq/ia-intro.html>

INDOOR AIR—BASIC FACTS

Most people are aware that outdoor air pollution can damage their health but may not know that indoor air pollution can also have significant effects. EPA studies of human exposure to air pollutants indicate that indoor air levels of many pollutants may be 2-5 times, and occasionally more than 100 times, higher than outdoor levels. These levels of indoor air pollutants are of particular concern because it is estimated that most people spend as much as 90% of their time indoors.

Over the past several decades, our exposure to indoor air pollutants is believed to have increased due to a variety of factors, including the construction of more tightly sealed buildings, reduced ventilation rates to the use of synthetic building materials and furnishings, and the use of chemically formulated personal care products, pesticides, and household cleaners.

In recent years, comparative risk studies performed by EPA and its Science Advisory Board have consistently ranked indoor air pollution among the top five environmental risks to public health. EPA, in close cooperation with other Federal agencies and the private sector, has begun a concerted effort to better understand indoor air pollution and to reduce people's exposure to air pollutants in offices, homes, schools and other indoor environments where people live, work, and play.

WHAT CAUSES INDOOR AIR POLLUTION?

Indoor pollution sources that release gases or particles into the air are the primary cause of indoor air quality problems in homes. Inadequate ventilation can increase indoor pollutant levels by not bringing in enough outdoor air to dilute emissions from indoor sources and by not carrying indoor air pollutants out of the home. High temperature and humidity levels can also increase concentrations of some pollutants.

Pollutant Sources

There are many sources of indoor air pollution in any home. These include combustion sources such as oil, gas, kerosene, coal, wood, and tobacco products; building materials and furnishings as diverse as deteriorated, asbestos-containing insulation, wet or damp carpet, and

cabinetry or furniture made of certain pressed wood products; products for household cleaning and maintenance, personal care, or hobbies; central heating and cooling systems and humidification devices; and outdoor sources such as radon, pesticides, and outdoor air pollution.

The relative importance of any single source depends on how much of a given pollutant it emits and how hazardous those emissions are. In some cases, factors such as how old the source is and whether it is properly maintained are significant. For example, an improperly adjusted gas stove can emit significantly more carbon monoxide than one that is properly adjusted.

Some sources, such as building materials, furnishings, and household products like air fresheners, release pollutants more or less continuously. Other sources, related to activities carried out in the home, release pollutants intermittently. These include smoking, the use of unvented or malfunctioning stoves, furnaces, or space heaters, the use of solvents in cleaning and hobby activities, the use of paint strippers in redecorating activities, and the use of cleaning products and pesticides in house-keeping. High pollutant concentrations can remain in the air for long periods after some of these activities.

Amount of Ventilation

If too little outdoor air enters a home, pollutants can accumulate to levels that can pose health and comfort problems. Unless they are built with special mechanical means of ventilation, homes that are designed and constructed to minimize the amount of outdoor air that can “leak” into and out of the home may have higher pollutant levels than other homes. However, because some weather conditions can drastically reduce the amount of outdoor air that enters a home, pollutants can build up even in homes that are normally considered “leaky”.

How Does Outdoor Air Enter a House?

Outdoor air enters and leaves a house by: infiltration, natural ventilation, and mechanical ventilation. In a process known as infiltration, outdoor air flows into the house through openings, joints, and cracks in walls, floors, and ceilings, and around windows and doors. In natural ventilation, air moves through opened windows and doors. Air movement associated with infiltration and natural ventilation is caused by air temperature differences between indoors and outdoors and by wind. Finally, there are a number of mechanical ventilation devices, from outdoor-vented fans that intermittently remove air from a single room, such as bathrooms and kitchen, to air handling systems that use fans and duct work to continuously remove indoor air and distribute filtered and conditioned outdoor air to strategic points throughout the house. The rate at which outdoor air replaces indoor air is described as the air exchange rate. When there is little infiltration, natural ventilation, or mechanical ventilation, the air exchange rate is low and pollutant levels can increase.

INDOOR AIR POLLUTION AND HEALTH

Health effects from indoor air pollutants may be experienced soon after exposure or, possibly, years later.

Immediate effects

Immediate effects may show up after a single exposure or repeated exposures. These include irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue. Such immediate effects are usually short-term and treatable. Sometimes the treatment is simply eliminating the person's exposure to the source of the pollution, if it can be identified. Symptoms of some diseases, including hypersensitivity pneumonitis, and humidifier fever, may also show up soon after exposure to some indoor air pollutants.

The likelihood of immediate reactions to indoor air pollutants depends on several factors. Age and preexisting medical conditions are two important influences. In other cases, whether a person reacts to a pollutant depends on individual sensitivity, which varies tremendously from person to person. Some people can become sensitized to biological pollutants after repeated exposures, and it appears that some people can become sensitized to chemical pollutants as well.

Certain immediate effects are similar to those from colds or other viral diseases, so it is often difficult to determine if the symptoms are a result of exposure to indoor air pollution. For this reason, it is important to pay attention to the time and place symptoms occur. If the symptoms fade or go away when a person is away from home, for example, an effort should be made to identify indoor air sources that may be possible causes. Some effects may be made worse by an inadequate supply of outdoor air or from the heating, cooling, or humidity conditions prevalent in the home.

Long-term effects

Other health effects may show up either years after exposure has occurred or only after long or repeated periods of exposure. These effects, which include some respiratory diseases, heart disease, and cancer, can be severely debilitating or fatal. It is prudent to try to improve the indoor air quality in your home even if symptoms are not noticeable.

While pollutants commonly found in indoor air are responsible for many harmful effects, there is considerable uncertainty about what concentrations or periods of exposure are necessary to produce specific health problems. People also react very differently to exposure to indoor air pollutants. Further research is needed to better understand which health effects occur after exposure to the average pollutant concentrations found in homes and which occurs from the higher concentrations that occur for short periods of time.

* * *

NOTES

1. How does the problem of indoor air pollution differ from that of outdoor air pollution? What are some of the obstacles to effective regulation of indoor air pollution?

2. The following excerpt describes some of the tools currently available for controlling indoor air pollution. Why have they failed to address the problem adequately? Will the control of indoor air pollution require the development of yet another federal regulatory program, or is this a problem which can (or should) be handled at the local level?

REGULATION OF INDOOR AIR QUALITY: THE LAST FRONTIER OF ENVIRONMENTAL REGULATION

R. Bruce Dickson

9 NAT. RESOURCES & ENV'T 20 (Summer, 1994)

Indoor air pollution is ranked by the Environmental Protection Agency (EPA) among the top five environmental risks to human health. The World Health Organization estimates that nearly one in every six commercial buildings in the United States suffers from sick-building syndrome and that occupants of another one in twelve suffer from building-related illnesses. Indoor air quality (IAQ) problems cost American business \$10 billion per year through lowered productivity, absenteeism, and medical costs. Yet despite the importance and high cost of IAQ problems, indoor air is not yet specifically addressed in any federal regulatory program.

One reason for this apparent neglect is the fairly recent genesis of the problem itself. In the early 1970s energy conservation measures produced a substantial reduction in the amount of outdoor air used in mechanical ventilation in newer buildings. Buildings became "tighter." This in turn brought a sudden increase in complaints of respiratory symptoms and in concentrations of contaminants, including CO₂, in the indoor environment. Yet the Clean Air Act (CAA), 42 U.S.C. §§ 7401 *et seq.*, passed in 1970, addressed only air pollution problems that contribute to the degradation of ambient air, which EPA interpreted as referring to outdoor air. The CAA amendments of 1990, 42 U.S.C. §§ 7470-7508, did not alter this original orientation. The law gave EPA the authority to control sources of air pollution and pollutants that cause degradation of the ambient air. The preferred mode of regulation has been to control sources of pollutants shown to pose a danger to the public health and welfare.

Similarly, the Toxic Substances Control Act (TSCA), 15 U.S.C. §§ 2601-29, adopted in 1976, authorized regulation of chemical substances that present an unreasonable risk of adverse health or environmental effects. 15 U.S.C. § 2605. Under TSCA, however, EPA cannot regulate unless it finds, on the basis of a particularly high standard of evidence, that the manufacture, processing, use, distribution or disposal of a chemical substance presents or will present such a risk. A surprisingly small number of regulatory actions have been adopted during the eighteen years in which TSCA has been in place.

As attention shifted to the indoor environment, the limitations of traditional modes of environmental regulation became apparent. Specific pollutants in buildings with poor indoor air quality were found in extremely low concentrations and occurred in combination with other substances in complex and constantly changing mixtures. Pinning the blame for a particular IAQ problem on an individual pollutant or source became increasingly difficult. As detection techniques improved to enable the detection of pollutants in the parts-per-billion range, the ability to detect extremely small concentrations of contaminants outpaced the ability to assess risks of these very low concentrations. Despite the desire to identify and regulate contaminants responsible for IAQ problems, scientific methodology failed to substantiate regulatory theory. Bob Axelrad, the head of the EPA Indoor Air Division, has expressed the resulting frustration: "We're caught between a desire to do something and an absence of hard data on which to act. . . . It just hasn't worked to try to find the smoking gun." *NEWSDAY*, Nov. 16, 1992, at 4.

The clash between good science and the desire to find a quick fix for IAQ problems has necessitated the resort to nontraditional approaches to environmental regulation. The search for a smoking gun has often failed because science cannot agree that, at the extremely low levels and in the complex and constantly changing mixtures found in the nonindustrial indoor environment, specific contaminants are the cause of particular adverse health effects. Thus

while an occasional culprit has been identified and controlled under TSCA, the substance-by-substance regulatory approach that worked well in the regulation of traditional environmental problems has been unable to address a significant number of the IAQ problems that have developed in tight buildings over the past two decades. The conclusion that indoor air is a qualitatively different environment in which traditional modes of regulation, based on pollutant-by-pollutant risk assessments, are of limited utility is gradually gaining consensus.

FOUR FACTORS INFLUENCING IAQ REGULATION

As this last frontier of environmental regulation is explored, four factors appear to be influencing the course of future IAQ responsibility. First, limitations in science have dictated that attention be shifted from the often-impossible search for a smoking gun to a more realistic and innovative effort to reduce IAQ problems through a combination of source management, where supported by the science, and ventilation system improvements. The scientific difficulties of a substance-by-substance approach have impeded most federal environmental agencies in addressing IAQ problems in any but the most well-established instances of toxic contamination. The present rulemaking by the Occupational Safety and Health Administration (OSHA), discussed below, represents just such an innovative approach to regulating indoor air quality through building system maintenance and ventilation requirements in all workplaces, including offices.

The second factor influencing the future course of responsibility for IAQ problems is a consequence of economic reality in our federal system. As the role of inadequate or poorly maintained ventilation systems in causing poor indoor air quality is understood, states are beginning to appreciate the economic consequences of a progressive IAQ regulatory program administered on a state-by-state basis. The recent experience of the State of Washington in retreating from a comprehensive IAQ regulatory program, discussed below, is illustrative.

The third factor influencing the process by which IAQ problems are resolved is taking place in the courts. The shift from an exclusive search for individual contaminants or smoking guns to an evaluation of entire building systems as a principal cause of IAQ problems has led to a broad expansion of the list of defendants in IAQ litigation. Recent cases have moved away from single-substance claims and have begun to name as defendants virtually everyone who can be said to share responsibility for the design, construction, and operation of ventilation systems.

Fourth, underlying all of these developments is the rapid growth in political pressure over the last few years to address IAQ problems. Unless a regulatory solution is found, Congress is likely to enact legislation that will have the effect of forcing regulatory agencies to take action on IAQ issues without regard for the state of the science.

A review of early efforts to regulate indoor air quality on a pollutant-by-pollutant basis will help set the stage for an understanding of the new regulatory approach likely to develop to resolve the bulk of future IAQ problems. Existing federal laws have long provided a framework for regulation of individual hazardous pollutants in indoor air, but with limited success.

EPA REGULATION OF INDOOR AIR

Neither the TSCA nor the CAA nor any other environmental law is specifically directed to the improvement of indoor air quality. The first congressional attention focused on IAQ problems occurred when concerns about the health effects of radon exposure arose in the mid-1980s. The Radon Gas and Indoor Air Quality Research Act, passed as Title IV of the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. § 7401,

authorized EPA to conduct an indoor air research program and to disseminate information regarding indoor air pollutant sources, building types that pose high risk, and methods for the prevention and abatement of indoor air pollution. Since 1986 EPA has conducted several information programs and research projects pursuant to this authority.

EPA is authorized by TSCA to regulate chemical substances, but only those that pose an unreasonable risk to health or the environment and only through the least burdensome control methods available. 15 U.S.C. § 2605(a). During the eighteen years in which TSCA has been in effect, EPA has regulated only a handful of substances, including metalworking fluids, chemicals used in air conditioning cooling towers, polychlorinated biphenyls, fully halogenated chloroflouroalkanes used in aerosol propellants, and asbestos. Although EPA is currently assessing a number of potential indoor pollutants for possible regulation under section 6 of TSCA, it is unlikely that the necessary finding of unreasonable risk can be made for a significant number of substances. Without such a finding, EPA cannot act to restrict the manufacture, processing, distribution, use, or disposal of a chemical substance under TSCA.

The cause of EPA's inaction under TSCA—whether the result of bureaucratic inertia, the consequence of difficult statutory hurdles that must be crossed before regulation is authorized, or a reflection of the lack of credible scientific evidence of unreasonable risks—has been much debated. EPA was found to have unreasonably delayed the adoption of test rules under section 4 of TSCA in 1980. *Natural Resources Defense Council, Inc. v. Costle*, 10 Env'tl. L. Rep. (Env'tl. L. Inst.) 20,274 (S.D.N.Y. 1980). When it acted in 1989 to ban the use of asbestos under section 6 of TSCA, it was rebuffed in court. In *Corrosion Proof Fittings v. EPA*, 947 F.2d 1201 (5th Cir. 1991), the Fifth Circuit rejected EPA's regulation prohibiting future manufacture, importation, processing, and distribution of asbestos in almost all products. The court ruled that EPA had failed to consider whether regulatory controls other than an outright ban would reduce the risk of asbestos to an adequate level. This failure to consider whether the regulation imposed the least burdensome control method available was found to have violated section 6 of TSCA.

EPA has also observed the technical difficulty of assessing complex mixtures of chemicals. In 1986 EPA issued its Final Guidelines for the Health Risk Assessment of Chemical Mixtures, 51 Fed. Reg. 34,014 (1986). The EPA Science Advisory Board (SAB) observed the lack of information concerning interactions among chemical substances and recommended that any risk assessment of chemical mixtures take care to note all assumptions on which the assessment depends. Do two substances interact? If so, do they interact in an additive or multiplicative way? Or do their effects offset each other? And what if a third or fourth substance is added to the mix? The SAB noted the lack of experimental information and the uncertainty that this lack of data imposes on any effort to predict the risks of exposure to mixtures of substances. Until a large amount of experimental data are available on the effects of interactions of indoor air contaminants, it will be extremely difficult, if not impossible, to assess accurately the existence or degree of risk posed by a mixture in the indoor environment.

THE ROLE OF THE CONSUMER PRODUCT SAFETY COMMISSION

The Consumer Product Safety Commission (CPSC) is another agency with authority to regulate products that may be sources of indoor air pollution. CPSC is authorized by the Consumer Product Safety Act (CPS Act), 15 U.S.C. §§ 2051 *et seq.*, to regulate consumer products that pose an unreasonable risk of injury and by the Federal Hazardous Substances Act (FHSA), 15 U.S.C. §§ 1261 *et seq.*, to regulate substances which, because of toxicity, irritation, sensitization, or other characteristics, may cause substantial personal injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable handling or

use. Under the FHSA action has been taken on an individual chemical basis to reduce the use of substances thought to pose a risk in the indoor environment. Thus CPSC has taken action to ban both vinyl chloride as a propellant and carbon tetrachloride as a solvent in spot removers, to label asbestos products, to remove perchloroethylene from spot removers (which was done voluntarily), to remove 1,1,1-trichloroethane from typewriter correction fluid, and to label methylene chloride in paint strippers.

Under the CPS Act, CPSC attempted in 1982 to ban ureaformaldehyde foam insulation on the basis of a finding of an unreasonable risk of acute irritation and cancer. Upon review by the Fifth Circuit, however, the regulation was overturned. *Gulf South Insulation v. United States Consumer Product Safety Commission*, 701 F.2d 1137 (5th Cir. 1983). In addition to procedural objections, the court declared that the record developed before the agency did not contain the substantial evidence necessary to support a finding of unreasonable risk. The Code of Federal Regulations contains only two CPS Act regulations directly relevant to indoor air quality—the ban of consumer patching compounds containing respirable free-form asbestos, 16 C.F.R. § 1304, and the ban of artificial emberizing materials (ash and embers) containing respirable free-form asbestos, 16 C.F.R. § 1305.

OSHA AND IAQ ISSUES

The federal agency that has had the most experience regulating indoor air quality is OSHA, which is authorized by the Occupational Safety and Health Act (OSH Act), 29 U.S.C. §§ 651 *et seq.*, to promulgate standards requiring conditions or practices “reasonably necessary or appropriate to provide safe or healthful employment and places of employment.” Since the OSH Act was passed in 1970, OSHA has promulgated standards to limit exposure to twenty-four individual substances, and has adopted as consensus standards exposure limits to nearly four hundred other substances. A few standards address hazards generically, by imposing practice requirements necessary to remedy a hazard regardless of the identity of the substance alleged to cause the hazard.

In 1991, under pressure to regulate environmental tobacco smoke, OSHA initiated rulemaking to explore the issue of whether and how to regulate indoor air quality in the workplace, including the nonindustrial workplace. *Occupational Exposure to Indoor Air Pollutants; Request for Information*, 56 Fed. Reg. 47,892 (1991). In April 1994 the agency took the next step toward regulation, proposing a comprehensive standard to regulate indoor air quality. See Department of Labor, Occupational Safety and Health Administration; Indoor Air Quality; Proposed Rule, 59 Fed. Reg. 15,968 (1994). If the OSHA proposal, or a comparable standard, is adopted, it will represent the most comprehensive effort to regulate indoor air quality in the history of environmental regulation.

What distinguishes the OSHA standard-setting process from efforts by other agencies to regulate indoor air quality is OSHA’s authority to adopt a generic health standard with applicability to IAQ problems regardless of its ability to identify a specific chemical that causes a specific adverse health effect—an authority that EPA and CPSC lack. OSHA’s authority to adopt generic standards was upheld in *United Steelworkers of America v. Aucther*, 763 F.2d 728 (3d Cir. 1985), in which the OSHA Hazard Communication Standard, 29 C.F.R. § 1910.1200, was sustained. To fit within OSHA’s standard-setting authority, a health standard must reasonably purport to correct a particular identified hazard. The agency has the authority to adopt a standard that is reasonably necessary to eliminate or diminish a significant risk of material health impairment. *Industrial Union Dep’t v. American Petroleum Institute*, 448 U.S. 641 (1980). The 1992 case of *AFL/CIO v. OSHA*, 965 F.2d 962 (11th Cir. 1992), confirmed

OSHA's authority to promulgate a truly generic standard, while overturning the OSHA Air Contaminants Standard.

The recent decision of the Eleventh Circuit in *AFL-CIO v. OSHA* revealed the difficulties posed by OSHA's attempt to set chemical-specific standards. In that case the agency attempted to set hundreds of standards limiting exposure to individual substances without addressing the individual risk posed by each chemical. The Air Contaminants Standard, adopted by OSHA in 1989, 29 C.F.R. § 1910.1000, was found to be a collection of chemical-specific standards, rather than a single generic standard, and was rejected because the agency had failed to build sufficient record support for the necessary "significant risk" finding for each substance regulated. In rejecting the Air Contaminants Standard, the court noted that OSHA did have the authority to issue truly "generic" standards, such as the Hazard Communication Standard, 29 C.F.R. § 1910.1200, and the Generic Carcinogen Standard, 29 C.F.R. pt. 1990. Of particular significance to OSHA's authority to regulate indoor air quality, the court also upheld OSHA's finding that sensory irritation so severe that employee health and job performance are seriously threatened constitutes material impairment sufficient to justify a standard, even if the effects are transitory. 965 F.2d at 975.

In view of the judicial support for generic standard-setting by OSHA, the difficulty in regulating indoor air contaminants on a chemical-by-chemical basis, and the judicial decision upholding OSHA's finding of sensory irritation as a material health impairment, the stage is set for OSHA to adopt a comprehensive generic ventilation standard as the most promising way to address a broad range of IAQ problems. If the agency can support a finding that inadequate ventilation and poorly maintained heating, ventilating, and air conditioning (HVAC) systems pose a significant risk of material health impairment and that a ventilation standard will significantly reduce the risk and is feasible, then such a standard might be upheld.

The OSHA proposal would require that all employers with nonindustrial workplaces prepare a written IAQ compliance program, designate a person to be responsible for ensuring the program's implementation, and retain certain building system reports, operations and maintenance manuals, construction documents, and similar materials. The proposed standard would also require certain minimum actions to obtain and maintain good indoor air quality:

* * *

While the OSHA proposal will undoubtedly be modified and refined before it is finalized, it represents the most comprehensive effort to date to allocate responsibility for IAQ problems among those who have the greatest degree of control over the source of most such problems—building systems—and over the way in which contaminant sources are used in a workplace.

STATE REGULATION AND ECONOMIC CONCERNS

A large number of states have initiated programs to improve indoor air quality. Among the most comprehensive was the program developed by the State of Washington. The Washington Department of Labor and Industries held hearings on its proposed regulatory program, Chapter 296-62 of the Washington Administrative Code. The proposal addressed the issue of indoor air quality in office work environments where it would have required documentation of HVAC systems, operation of systems to provide the minimum outdoor air ventilation rate required by applicable codes, controls for certain contaminant sources, evaluation and control of symptoms related to indoor air quality, and special controls on indoor air quality during remodeling of occupied offices. The regulations would have applied to all

building owners and employers with office work environments in the public and private sectors.

When the proposal was defeated in January 1994, one of the most frequently cited reasons was a concern that the regulation would provide a substantial hindrance to business retention in, and relocation into, the State of Washington. *Indoor Air Quality Update*, Vol. 7, No. 4 at 10 (Mar. 1994). The state was generally concerned that imposing additional costs on the operation of businesses in Washington would place the state at a severe disadvantage in the competition among states to attract nonindustrial business, a fate that would further damage the economy of the Pacific Northwest. It is interesting to note that the former head of the Washington State Department of Labor and Industries, Joseph A. Dear, is currently head of OSHA.

Many states are considering IAQ programs, but the Washington program would have gone the furthest in imposing IAQ requirements on all workplaces, whether in the public or private sector. The fate of the Washington program is indicative of the economic problems inherent in imposing on a state level regulatory requirements that are perceived as increasing the cost of doing business.

LITIGATING IAQ COMPLAINTS

The gradual shift from a pollutant-by-pollutant approach for assessing responsibility for IAQ problems to a building systems approach, in which the complexity of indoor air quality is taken into account, has been reflected as much in the courts as before the agencies and the states. Individual pollutants were the focus of nearly all early cases, from asbestos to lead to formaldehyde to household pesticides. As the more nebulous indoor air "injuries," like multiple-chemical sensitivity syndrome, sick-building syndrome, and building-related illness worked their way into the courts, however, attempts to place blame on individual products or substances failed.

Thus in 1989 a lawsuit against a carpet manufacturer for causing "multiple-chemical sensitivity syndrome" failed. In *Beebe v. Burlington Industries*, No. A8103037 (C.P. Hamilton County, Ohio, filed Apr. 13, 1981), the jury ruled against the plaintiff on a strict liability complaint, as the plaintiff failed to prove that injuries were caused by a defect in the carpet. In 1990 four lawsuits by employees of the Department of Agriculture against another manufacturer of carpet and the manufacturer of glue used in the carpet installation failed when a summary judgment motion for the defendants was granted by Judge Patrick Kelly of the U.S. District Court for the District of Kansas. The plaintiffs had complained that their illnesses were caused by the carpet glue but were unable to substantiate the claims. *Dreesen v. W.W. Henly Co.*, No. 87-1378-K (D.C. Kan. Nov. 30, 1990).

Unlike these highly focused cases that alleged that a single contaminant caused a building-related illness, the more successful cases have been brought against a plethora of potentially responsible parties based on several theories of liability. For example, in *Gilger v. Lee Construction Inc.*, No. 64511 (Kan. Sup. Ct., filed Nov. 27, 1989), where summary judgment for the defendants was overturned on appeal, the complaint named the builder, the HVAC installer, and the natural gas company, blaming illnesses on an improperly vented heating system.

Other cases have named owners, managing agents, and HVAC managers. Several cases brought by employees of EPA against the owners and managers of the EPA headquarters building recently resulted in jury verdicts totalling nearly \$1 million. *Bahura v. S.E.W. Investors*, No. 90- CA10594 (D.C. Super. Ct., decided Dec. 23, 1993). The plaintiffs claimed

that they had become chemically sensitized as a result of contaminants released during renovation. In verdicts handed down on December 23, 1993, several plaintiffs prevailed on their principal claims.

Perhaps the best example is the widely publicized case of *Call v. Prudential*, No. SWC 90913 (Cal. Super. Ct., L.A. Co., filed Apr. 28, 1987), which was settled in October 1990. The plaintiffs, who lost profits and incurred other damages, including personal injury, as a result of poor indoor air quality, alleged that damages were caused by the misconduct of virtually all involved in the design, construction, and management of an office building. Construction had continued on other parts of the building after plaintiffs' occupancy began. The plaintiffs named as defendants the building's owners, managers, architects, engineers, general contractors, ventilation contractors, environmental consultants, leasing agents, energy consultants (who had allegedly advised the managers to diminish the flow of outside air to save energy), and the manufacturers of solvents, paints, and furniture used in the construction. The strategy of naming everyone responsible for a building system has been successful, as the belief that poor indoor air quality is the function of the entire building system has gained in acceptance.

The uncertainty of litigation is exacerbated, however, by the poor delineation of responsibilities for indoor air quality. What are the obligations of owners, builders, designers, managers, and the like? The uncertainties can only be diminished when predictable standards are established governing the appropriate design and maintenance of ventilation systems during all phases of a building's operation. Until standards are established, by regulation or voluntary means, the legal relationships among all parties, including occupants, will be in a state of flux and the subject of repeated litigation.

THE PRESSURE FOR LEGISLATION

Underlying these developments is a substantial increase in political pressure for regulatory action. Legislation has been introduced in each of the last several Congresses that would have the principal effect of forcing regulatory action. The Mitchell bill, S. 656, 103d Cong., 1st Sess. (1993), which passed the Senate during the 103d Congress, would require EPA to develop a strategy to coordinate IAQ actions by it and other agencies using existing authority to regulate. EPA would also be given large appropriations for IAQ research and would be required to list indoor air contaminants and to prepare health advisories on each. Legislation has been introduced in the House by Congressman Kennedy, H.R. 2919, 103d Cong., 1st Sess. (1993), that would give EPA unprecedented authority to impose IAQ controls in virtually any indoor environment, including the workplace. While the Bush administration opposed indoor air legislation, the Clinton administration in 1993 indicated its support. Testimony of Deputy EPA Administrator Robert Sussman before the Senate Subcommittee on Clean Air and Nuclear Regulation of the Committee on Environment and Public Works (May 25, 1993), although it did not endorse any current bill. *See* Pending Indoor Air Quality and Radon Abatement Legislation, S. Rep. No. 103-176 (1993).

The United States is only now beginning to appreciate the environmental consequences of the energy conservation measures taken in the 1970s. The reduction in natural ventilation brought about a significant portion of the IAQ problems we face today. The long-term solution lies where the problems began. As the importance of ventilation and the role of HVAC systems in indoor air quality are recognized, regulation of building ventilation systems is an essential step to attaining acceptable indoor air quality. Regulatory standards are also essential to make legal responsibility for good indoor air quality reasonably predictable. Whether through an OSHA standard addressing indoor air quality in the nonindustrial workplace or through legislation forcing one or more of the agencies to take action, a regulatory approach to

improving indoor air quality is sure to be developed within the next few years. In view of the difficulties in assessing risks from individual pollutants in small and varying concentrations, the approach to be taken will probably include as one important element the regulatory oversight of building ventilation systems.

NOTES

1. The American Lung Association (ALA) maintains an internet site which describes its views on the chief problems posed by indoor air pollution. See *American Lung Association Fact Sheet—Indoor Air Pollution*, <http://www.lungusa.org/noframes/global/news/report/viron/virindapfac.html>. According to the ALA:

- Air pollution contributes to lung disease, including respiratory tract infections, asthma, and lung cancer. Lung disease claims more than 300,000 lives in America every year and is the third-leading cause of death in the United States. Over the last decade, the death rate for lung disease has risen faster than for almost any other major disease.
- Biological pollutants, including molds and bacteria, promote poor indoor quality and may be a major cause of days lost from work and school. In office buildings, heating, cooling, and ventilation systems are frequent sources of biological substances which are inhaled, leading to breathing problems.
- Nearly 1 out of every 15 homes in the United States have radon levels above 4 pCi/L, the Environmental Protection Agency recommended action level. Radon gas can enter the home through cracks in the foundation floor and walls, drains, foundations and other openings. Indoor radon exposure is estimated to be the second leading cause of lung cancer, responsible for thousands of deaths each year in the United States.
- Environmental tobacco smoke (ETS) or so-called “secondhand smoke,” a major indoor air pollutant, contains about 4,000 chemicals, including 200 known poisons such as formaldehyde and carbon monoxide, as well as 43 carcinogens.
- ETS causes an estimated 3,000 lung cancer deaths in non-smokers and 150,000 to 300,000 cases of lower respiratory tract infections in children under 18 months of age each year.
- Formaldehyde is a common chemical compound, used primarily in adhesive or bonding agents for many materials found in households and offices. The release of formaldehyde into the air may cause health problems, because formaldehyde has been identified as a powerful irritant that contaminates the air in your home or office.
- Asbestos is the name given to a group of microscopic mineral fibers that are flexible, durable, and that will not burn. Asbestos fibers are light and small enough to remain airborne; they can be inhaled into the lungs and can cause asbestosis (scarring of the lung tissue), lung cancer and mesothelioma, a relatively uncommon cancer of the lining of the lung or abdominal cavity.
- Many asbestos products are found in the home, including roofing and flooring materials, wall and pipe insulation, spackling compounds, cement, coating materials, heating equipment, and acoustic insulation. These products are a potential problem indoors only if the asbestos-containing material is disturbed, or when it disintegrates with age.
- Heating systems and home equipment such as stoves, furnaces, fireplaces, heaters, and dryers produce several combustion products, of which the most dangerous are carbon monoxide and nitrogen dioxide.

- Carbon monoxide is an odorless, colorless gas that interferes with the distribution of oxygen to the body. Depending on the amount inhaled, this gas can impede coordination, worsen cardiovascular conditions, and produce fatigue, headache, confusion, nausea, and dizziness. Very high levels can cause death.
- Nitrogen dioxide is a colorless, odorless gas that irritates the mucous membranes in the eye, nose and throat and causes shortness of breath after exposure to high concentrations. Prolonged exposure to high levels of this gas can damage respiratory tissue and may lead to chronic bronchitis.
- Household cleaning agents, personal care products, pesticides, paints, hobby products, and solvents may be sources of hundreds of potentially harmful chemicals. Such components in many household and personal care products can cause dizziness, nausea, allergic reactions, eye/skin/respiratory tract irritation, and cancer.

2. The Sierra Club also has an Internet site where it sets forth policies adopted by its Board of Directors. Among the recommendations included in the Sierra Club policy on indoor air pollution are the following: (a) designating the EPA has the lead agency for management of air pollution research, education, and control; (b) enacting comprehensive right-to-know legislation that would require labeling of household furnishings, appliances, and products with information on potential adverse health effects associated with their improper use; (c) adopting building codes that would promote the use of materials that do not give off toxic emissions, and that would insure that buildings are constructed with adequate ventilation; (d) adopting federal, state, and local regulations as necessary to prohibit smoking in indoor public places. [Http://www.sierraclub.org/policy/307.html](http://www.sierraclub.org/policy/307.html).

3. Many insurance policies contain pollution exclusion clauses which make the insurance policy inapplicable to damages that arise out of the release of pollutants into the environment. Often these clauses contain exceptions for sudden and accidental releases, but in recent years most policies are drafted to deny coverage whether or not the release is sudden or accidental. See Barry R. Ostrager & Thomas R. Newman, HANDBOOK ON INSURANCE COVERAGE DISPUTES § 10.02(e)(1995). Most courts that have considered the application of pollution exclusion clauses to indoor air pollution have found the clauses inapplicable on the grounds that policies exclude coverage only for releases to the *natural* environment. Thus, insurance companies have generally been found liable for damages in these cases. *Stoney Run Co. v. Prudential Commercial Insurance Co.*, 47 F.3d 34 (2d Cir. 1995); *Board of Regents v. Royal Insurance Co.*, 517 N.W. 2d 888 (Minn. 1994); *Continental Casualty Co. v. Synalloy Corp.*, 667 F. Supp. 1563 (S.D. Ga. 1986), *aff'd*, 826 F.2d 1024 (11th Cir. 1987). See also, Lisa G. Youngblood & Thomas K. Black, *The Pollution Exclusion Saga Continues: Does it Apply to Indoor Releases?*, 28 ENVTL. L.REP. 10,021 (1998).

GLOSSARY

ACE: Any Credible Evidence. According to EPA rules, “any credible evidence” can be used to prove a violation of a facility’s emission standards, even if the evidence does not derive from the compliance test method used by the facility. 40 C.F.R. § 51.212.

AQCR: Air Quality Control Regions. Regions within one or more states designated by the EPA or the Governor of the state with EPA approval, for the purpose of providing for the attainment and maintenance of the NAAQSs. There are currently 244 AQCRs in the United States. 40 C.F.R. Part 81, Subpart B.

AQMP: Air Quality Maintenance Plans. A plan that a state must submit as a revision to its SIP whenever it proposes to redesignate a nonattainment areas as attaining the NAAQS. The plan must provide for the maintenance of the NAAQS for the air pollutant for which redesignation is sought, for at least 10 years after redesignation. § 175.

AQRV: Air Quality Related Values. Those values, including visibility, which the Federal Land Manager of a mandatory Class I area must protect from the adverse impacts that may result from construction of a major emitting facility in an area. *See* § 162(d).

BACT: Best Available Control Technology. An emission limitation based on the maximum degree of reduction which the permitting authority determines is achievable taking into account energy, environmental and economic impacts and other costs. § 169(3). BACT must be used by any new or modified major emitting facility in a PSD area.

BART: Best Available Retrofit Technology. The best available technology for reducing or eliminating visibility impairment taking into consideration costs, energy and non-environmental impacts, the remaining useful life of the source, existing pollution control technology in use at the source, and the degree of improvement that may reasonably be expected from use of the technology. § 169A (g)(2). BART must be used by major stationary sources that adversely affect the visibility of specially designated federal Class I areas.

Baseline Concentration. “The term ‘baseline concentration’ means, with respect to a pollutant, the ambient concentration levels which exist at the time of the first application for a permit in an area subject to this part, based on air quality data available in the Environmental Protection Agency or a State air pollution control agency and on such monitoring data as the permit applicant is required to submit. Such ambient concentration levels shall take into account all projected emissions in, or which may affect such area from any major emitting facility on which construction commenced prior to January 6, 1975, but which has not begun operation by the date of the baseline air quality concentration determination. Emissions of sulfur oxides and particulate matter from any major emitting facility on which construction commenced after January 6, 1975, shall not be included in the baseline and shall be counted against the maximum allowable

increases in pollutant concentrations established under this part.” §169(4).

CTG: Control Technique Guidelines. Guidelines issued by EPA for particular categories of sources on pollution control technologies that are available for such sources. *See* § 108(b); *see also*, §§ 178, 183.

CEMS: Continuous Emission Monitoring System. Computer-driven monitors that provide a constant record of emissions from a source. Sources subject to the acid deposition program of Title IV must install at their facilities a CEMS or its equivalent. § 412(a). Other major stationary sources may be required to install such systems under the enhanced monitoring requirements of § 114(a)(3). *See also* § 504(b).

Criteria Pollutants: Air pollutants which the EPA has determined endanger the public health or welfare *and* which result from numerous and adverse sources. § 108(a). EPA must establish national primary and secondary ambient air quality standards for each such pollutant. In conjunction with the establishment of these standards, EPA must also issue *air quality criteria* for each of these pollutants which reflect the latest scientific knowledge regarding their impact on the health and welfare of the public. § 108(a)(2).

DCO: Delayed Compliance Order. § 113(d) of the Act provides for the issuance of such orders to existing stationary sources. DCOs allow compliance after the deadline for compliance contained in the SIP. Penalties may not be issued to operators of major stationary sources for which a DCO has been issued.

Designated Pollutants: Pollutants which are neither criteria pollutants nor hazardous pollutants but for which standards have been established for categories or classes of facilities under the NSPS program.

GACT: Generally Available Control Technology. An alternative standard for “area sources” of hazardous air pollutants that the Administrator may impose in lieu of the more stringent MACT standards. § 112(d)(5).

GEP: Good Engineering Practice. The principle used to ascertain appropriate stack heights for stationary sources of air pollution. “Good engineering practice means...the height necessary to insure that emissions for the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source...” § 123(c). Stack heights may not exceed two and one-half times the height of the source unless the owner of the source demonstrates to EPA that such heights is necessary as a GEP. *Id.* Emission limits for a source are set based on a stack height no higher than the GEP stack height.

HAP: Hazardous Air Pollutants. Air pollutants listed by the EPA Administrator in accordance with § 112. Under § 112(b), the Administrator must periodically revise the list to include pollutants which “present or may present...a threat of adverse human health effects or adverse environmental effects.” Criteria pollutants, however, may not generally be listed as HAPs.

Integral Vista: “[A] view perceived from within a mandatory Class I Federal area of a specific landmark or panorama located outside the boundary of the mandatory Class I Federal area.” 40 C.F.R. § 51.301(n). EPA rules provide for limited protection of these integral vistas from major

sources of air pollution so long as such vistas are identified at least six months prior to submission of the permit application for the new source. *See* 40 C.F.R. § 51.30 (b).

LAER: Lowest Achievable Emission Rate. The rate of emissions which reflects the most stringent emission limitation which is contained in the implementation plan of any State (unless the operator demonstrates that such limitations are not achievable) or, the most stringent emission limitation achieved in practice, whichever is more stringent. § 171(3). No new or modified major stationary source can be located in a nonattainment area unless, among other things, it can achieve LAER.

MACT: Maximum Achievable Control Technology. The standard that must be met for major sources of HAPs and, if the Administrator so determines, for area sources of HAPs as well. For new sources, the MACT standard must be at least as stringent as the emission controls achieved by the best controlled similar source. For existing sources, MACT must be at least as stringent as the average achieved by the best performing 12% of similar sources. § 112(d)(3).

Major Stationary Source and Major Emitting Facility. Any stationary facility or source of air pollutants which directly emits or has a potential to emit, one hundred tons per year or more of any pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator). CAUTION: For purposes of PSD and visibility protection these terms have different meanings. *See* §§ 169(1); 169A(g)(7). Furthermore, the SIP requirements established in the 1990 Amendments require that sources in certain nonattainment areas be treated as major even where they emit less than 100 tons of a single pollutant in a year.

Modification: “The term ‘modification’ means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted.” § 111(a)(4).

NAA: Nonattainment Area. ACQRs, or portions thereof, for which one or more of the ambient air quality standards have not been met. § 171(2).

NAAQS: National Ambient Air Quality Standards. Primary and secondary NAAQSs are established for all criteria pollutants. Primary standards are considered the minimum standards necessary to maintain public health with an adequate margin of safety. Secondary standards are those necessary to promote the public welfare. § 109.

NESHAP: National Emission Standards for Hazardous Air Pollutants. Standards established under § 112 of the Act to control emissions of hazardous air pollutants. *See also*, HAP.

NCP: Noncompliance Penalties. Penalties which are *required* for (1) all major stationary sources violating any emission limit, or any emission standard or schedule established by a SIP; (2) *any* stationary source violating a standard established under the NSPS or NESHAP programs; (3) any stationary sources which are violating their NSPS. Limited exemptions apply to this penalty requirement. Any penalty imposed under this section must at least equal the economic value of noncompliance. § 120(d).

NSO: Primary Nonferrous Smelter Orders. NSOs are similar to a DCO in that they authorize compliance beyond the date set forth in the SIP. They are granted to primary nonferrous smelters under Section 119 as an *alternative* to, and under standards that differ from, DCO. An operator cannot obtain both a DCO and an NSO for a single facility.

NSPS: New Source Performance Standards. NSPSs are *emission* standards for new or modified *stationary* sources. They must also include a percentage reduction in emission limitation and percentage reduction achievable through the application of the best technological system of continuous emission reduction which the EPA determines has been adequately demonstrated, taking into account costs, other health and environmental impact, and energy requirements. §111(a)(1)(C). In accordance with § 111 of the Act these emission standards are established for various categories and classes of facilities.

NSR: New Source Review. Procedures contained in a SIP whereby a state may determine whether new sources of air pollution will interfere with the attainment or maintenance sources of the NAAQS. 40 C.F.R. § 51.18. NSR must also insure that major new sources and major modifications of existing sources are constructed and operated consistent with PSD and visibility standards. 40 C.F.R. § 51.307.

Offsets: The principle which prohibits the construction of major new sources of air pollution in nonattainment areas unless the proponent of the new source can obtain reductions in pollution within the area that will more than compensate for the pollution contributions to be made by the new source. § 173(1)(A).

PSD: Prevention of Significant Deterioration. PSD is a federal policy established by § 169 of the Act to protect the quality of those areas of the country that currently meet or exceed the NAAQSs.

RACT: Reasonably Available Control Technology. Devices, systems, process modifications, or other apparatus or techniques, the application of which will achieve emission limitations established by EPA, taking into account the necessity of imposing such limitations to maintain air quality standards, the social and economic impacts of imposing such limitation and alternative meaning available for achieving the air quality standards. 40 C.F.R. § 51.1(o). Existing stationary sources in nonattainment areas are required, at a minimum, to use RACT to achieve reductions in air emissions.

RACM: Reasonably Available Control Measures. Measures required to be adopted in all nonattainment plans. § 172(c)(1).

RBLC: RACT/BACT/LAER Clearinghouse. A central database of control technology information available on the internet at: <http://www.mapsweb.rtna.epa.gov/RBLCWeb/blo2.htm>. § 108(h).

RFP: Reasonable Further Progress. Annual incremental reductions in emissions of pollutants required for an area is deemed nonattainment. §171(1).

RVP: Reid Vapor Pressure. A measure of the volatility of fuel. More volatile fuels release more hydrocarbons and thus contribute to ozone pollution.

SIP: State Implementation Plan. SIPs are plans developed by the states subject to EPA approval for achieving and maintaining the NAAQS for that state. If a state fails to adopt an adequate SIP, EPA must devise and implement a SIP for that state.

INDEX

- accidental release program, 65, 300
- acid deposition, 5, 10-12, 16, 18-20, 24, 30, 31, 65, 90, 106-07, 116, 175-76, 184, 249, 267, 286, 288, 293, 338-42, 345, 349, 389, 464
- affected sources/units, 67, 275, 339, 341, 362, 367
- allowances, 24, 66
- alternative emission limitation (AEL), 345-49
- air quality control regions (AQCRs), 29, 95-96, 102, 139-40, 149, 153-55, 168, 174, 185, 192, 195, 253, 298, 337
- air quality criteria, 11, 56, 71-73, 77-79, 473
- air quality related value (AQRV), 59, 219-20, 222-23, 228
- any credible evidence (ACE), 250, 377-78
- baseline concentrations (*see prevention of significant deterioration*)
- best available control technology (BACT) (*see prevention of significant deterioration*)
- best available retrofit technology (BART) (*see prevention of significant deterioration*)
- best available technology (BAT), 26-31, 40, 41
- baghouse, 31, 270, 274-75, 298
- California emission standards, 414, 436, 438, 443
- carbon dioxide, 13, 22, 31, 91, 443, 485-87, 491, 493, 496, 498-99, 501, 503
- carbon monoxide, 1, 3, 56-57, 74, 90, 118-19, 139, 144, 154-55, 187, 191, 298, 413-14, 419-20, 428, 436, 440, 456, 506, 515-16
- carbon tetrachloride, 74, 392, 398, 403-04, 511
- chemical safety and hazard investigation board, 65
- chlorofluorocarbon (CFC), 13, 28, 100, 392, 394, 402, 404, 500
- Chicago Board of Trade, 67, 339
- citizen suits, 67, 69, 191, 195, 197, 250, 356, 363, 372-73, 375, 377, 463, 471, 473-74, 477-78, 482-84
- clean air corridors, 241-42
- common law remedies, 35-53
 - federal common law, 47-48, 53
 - nuisance, 35-43, 46-48, 50-53
 - trespass, 41-43, 357
- compliance assurance monitoring (CAM), 250
- compliance certifications, 68, 249, 356
- compliance orders (COs), 371, 471
- continuous emissions monitoring systems (CEMS), 11, 67, 249, 373-77
- continuous emissions opacity monitors, 373
- control technique guidelines (CTGs), 148
- control technology review, 205
- criteria document, 78-82, 84-85, 87, 91
- designated pollutants, 63, 66
- electrostatic precipitators, 17, 164, 274
- emissions trading programs, 267
 - bubbles, 65, 142, 217, 326, 328-38, 384-88
 - economic and technological feasibility, 83, 88, 108, 115-16
 - emissions charges, 22
 - emission offsets, 65-66, 185, 328-29

- emission reduction banking, 328-29
- emission reduction credits (ERCs), 65, 66, 142, 328-31, 334, 336
- emissions trading, 20, 24, 26, 65-66, 142, 176, 267, 318, 328, 330, 336-37, 384, 496-97, 503
- netting, 65-66, 142, 328-29, 331, 334, 336
- enforcement, 361-89
 - civil and criminal penalties, 115
 - compliance certifications, 68, 249, 356
 - compliance order, 114, 361, 366, 369, 371, 374, 444, 471
 - criminal penalties, 68, 115, 292, 370-71, 381
 - federal enforcement, 234-35, 362
 - jury trial, 372
 - noncompliance penalties, 362-63, 382-88, 464
 - notice of violation, 361, 365-67, 369-71
 - state implementation plans, 185-201
- environmental appeals board (EAB), 217, 223, 362, 383
- environmental incentive program (EIP), 337
- EPCRTKA, 310
- extremely hazardous air pollutants (EHAP), 65
- federal facilities, 101
- federal implementation plans (FIP), 90, 94, 126, 186, 191
- fuels and fuel additives, 450-61
 - catalytic converters, 425, 448, 456
 - low sulfur diesel fuel, 461
 - oxygenated gasoline, 460-61
 - reformulated gasoline (RFG), 8, 460
 - Reid vapor pressure (RVP), 460
- fugitive emissions, 145, 215-16, 223-26, 228, 230, 303, 306-07, 310, 320
- generally available control technology (GACT) (*see hazardous air pollutants*)
- Geneva protocol, 184
- global climate change, 13, 16, 485-87, 494
 - intergovernmental panel on climate change (IPCC), 487, 500, 504
 - Kyoto Protocol, 490-91, 495-98
- good engineering practice, 105-07
- Grand Canyon Visibility Transport Commission (GCVTC), 238-40
- hazardous air pollutants (HAP), 12, 31, 63-66, 68, 74, 116, 217-18, 267, 285, 287, 298-99, 301-04, 306-07, 313, 328, 332, 378, 381, 407, 415, 463-64
 - area sources, 65, 258-59, 299-302, 304-05, 310
 - early reduction program, 65
 - generally available control technology (GACT), 64, 300, 302
 - listing, 65, 72-73, 76, 78, 188-89, 227-29, 299, 305, 324, 332, 374-75, 405, 409-11
 - major source, 4, 8, 60, 62, 64-65, 77-78, 123, 140, 168, 172, 205, 216, 223, 225, 258, 261, 284, 286-87, 292, 299-310, 323, 328, 345, 351-52, 363, 367, 372, 384, 413
 - maximum achievable control technology (MACT), 64, 65, 218, 288, 300-05, 310, 318
 - motor vehicles, 6, 69, 78, 88, 93, 192, 244, 413-16, 419-20, 427, 436-41, 457-59, 463-64
 - residual risk, 65, 300
- hydrocarbons (*see also volatile organic compounds*), 13, 56, 69, 74, 96-98, 100, 139-41, 384, 413-14, 419, 429-30, 440, 456, 459
- Helsinki Protocol, 184
- indoor air pollution, 16, 505-08, 510, 515-16
- inspections and enforcement, 56, 67, 136-38, 351-61, 376, 389
 - noncompliance penalties, 362-63, 382-88, 464

- notices of violation (NOVs), 361, 365-67, 369-71
- international air pollution, 338
- interstate air pollution, 45, 53, 55, 158, 172-73, 210
- judicial review
 - citizen suits, 67, 69, 191, 195, 197, 250, 356, 363, 372-73, 375, 377, 463, 471, 473-74, 477-78, 482-84
 - petitions for review, 108-10, 149, 154, 175, 185, 190, 192, 194, 196, 217, 231, 233, 235, 301, 310, 319, 342, 344-45, 408, 452, 455, 465, 467, 482-83
 - state implementation plans (SIP), 56, 71, 73, 79, 90, 93-95, 99, 101-03, 108-10, 113-16, 124, 134, 139-41, 144-45, 151, 155-59, 162-64, 167, 171, 177, 185, 192, 200, 205, 207-09, 231, 233, 248, 281, 285, 293, 309, 321, 361, 372, 382, 464
- lowest achievable emissions rate (LAER)
 - (*see nonattainment areas*)
- lead, 1, 4, 8, 20, 29, 51, 57-59, 61, 68, 71-74, 76-90, 108, 116-19, 121, 128-29, 166, 184, 189-90, 195, 209, 230, 317, 324, 326, 333, 356, 362, 391, 393, 413, 419, 422-24, 428, 430-32, 434, 455-57, 465, 477, 479-80, 482-84, 487, 493, 513, 516
- lead criteria document, 79-80, 84
- low emission vehicles (LEV), 437, 443
- major source (*see hazardous air pollutants*)
- mobile sources, 40, 56, 69, 98, 241, 243-44, 330, 333, 361, 444, 456
 - aircraft emissions, 449, 464
 - clean fuel vehicles, 415
 - "cold start" standards, 3, 415
 - hazardous air pollutants, 12, 31, 63-66, 68, 74, 116, 217-18, 267, 285, 287, 298-99, 301-04, 306-07, 313, 328, 332, 378, 381, 328, 332, 378, 381, 407, 415, 463-64
- motor vehicle emission standards, 435
- nonconformance penalties, 69, 414
- on-board vapor recovery, 414, 459
- summertime "ozone prone" conditions, 415
- useful life, 25, 69, 236, 413-15, 424-25, 444-45, 448-49, 451, 454
- warranty, 440
- zero emission vehicle (ZEV), 435, 437-43
- modification, 61, 63, 66, 116, 123, 145, 174, 205, 212-14, 216-17, 223-24, 230, 243, 250, 268, 272, 275-84, 286, 293-94, 296-98, 302, 306, 321-23, 328-29, 337, 346, 362, 403, 421, 431, 465-66, 501
- monitoring and modeling, 3, 8-11, 17, 29, 30, 58, 60, 62, 67, 82, 105, 118, 120, 122, 140, 149-55, 205-06, 208, 210-12, 216, 229, 232, 237-38, 240, 243, 245-56, 260-61, 265, 271, 287-89, 291-94, 302, 316, 333, 340-41, 351, 353-54, 356-57, 373, 377, 402, 459, 478
 - CRSTER, 160-61, 261-65
 - enhanced monitoring, 68, 249-50
 - reduction model, 95-98
 - state and local air monitoring systems (SLAMS), 254, 256
- Montreal Protocol, 32, 69-70, 393-94, 402-04, 498
- national air monitoring stations (NAMS), 254, 256
- national ambient air quality standards (NAAQS), 1-12, 56-58, 62-63, 74-76, 87-88, 90-91, 99, 117-18, 120-22, 124, 139, 143-46, 149-76, 185-87, 190, 192, 203-04, 206, 208, 215-16, 230, 236-37, 239-40, 243, 245-46, 251-55, 271, 276-77, 293-96, 298, 320, 329, 333, 336-37, 376, 382-83, 436, 459, 472-78

- new source performance standards, 25, 31, 60-61, 63, 66-67, 73, 116, 205, 244, 267, 271-73, 275-81, 284, 298, 300, 318, 320-21, 323, 328, 332, 336, 463-64
- new source review, 61, 66, 151, 241-42, 257, 275-76, 284, 294-95, 310, 323, 328-29, 333, 336
- nitrogen dioxide, 1, 2, 5, 56-58, 74, 118-20, 230, 436, 515-16
- nitrous oxides, 56, 74, 413-14, 456, 493, 496
- nonattainment areas, 8, 55-57, 59, 62-63, 66, 69, 90, 94, 116, 118, 120-23, 125, 129, 131, 133-35, 138, 142-46, 149-55, 171, 176, 185-87, 191-92, 215, 253, 255-56, 261-62, 275, 293, 298, 305, 318, 320-23, 325-26, 329-31, 333-38, 389, 415, 429-31, 434, 442, 460
 - lowest achievable emissions rate (LAER), 41, 57, 62-64, 123, 139-40, 142-43, 148, 217, 275, 318, 320, 325, 333, 336
 - milestones, 124, 127, 143, 155, 246
 - nonattainment area plans, 143
 - reasonably available control measures (RACM), 57, 121, 143
 - reasonable further progress (RFP), 57, 63, 121-23, 143, 145, 320-21
 - reasonably available control technology (RACT), 5, 63-64, 66, 116, 121-22, 125-26, 128-31, 138, 142-43, 145-48, 151, 336
- noncompliance penalties (*see enforcement*)
- nonconformance penalties (*see mobile sources*)
- opacity, 249-50, 269, 271, 368, 373-78
- oxygenated gasolines (*see fuels and fuel additives*)
- ozone (tropospheric), 1, 2, 5-8, 12-13, 32, 56-57, 62, 69-70, 74-76, 87, 90, 100, 118-26, 129, 131, 133-34, 138, 141, 143-44, 149-55, 187, 192, 236-37, 239-40, 243, 245-46, 256, 298, 305, 318, 383-84, 391-95, 402-09, 412-13, 415, 429, 433-36, 443, 459-60, 464, 488, 496, 498, 501
- ozone nonattainment areas, 8, 62, 69, 121-22, 125, 129, 131, 133, 138, 143-44, 155, 187, 192, 256, 305, 415, 460
- ozone transport regions, 125, 133-34, 138
- particulate matter, 1, 2, 5, 7-9, 56-58, 75, 76, 118, 145-46, 155, 187, 204, 207-08, 211, 225-27, 236-37, 239-40, 269, 294, 318, 389, 413, 415-16, 418-19, 423, 425, 428, 473
- permits, 58, 59, 62, 267, 275, 287, 289, 291, 292, 301
 - EPA veto authority, 60, 228, 292
 - major emitting facilities (MEF), 58-59, 61-63, 66, 142, 206-13, 215-18, 222, 224-26, 248, 275, 281, 284, 306, 308, 320, 323, 362, 367
 - major modification, 63, 212-14, 216, 223, 281, 283, 293-94, 296-98, 321-22, 328-29
 - major stationary sources (MSS), 22, 59-63, 66, 68, 94, 122-25, 138, 143, 145, 185, 205, 224-25, 236, 238, 249, 251, 275, 281, 293, 296, 305-07, 318, 320, 323, 326, 332, 334, 336, 351, 356, 362, 367, 370, 382, 384
 - monitoring requirements, 206, 216, 249, 316
 - new source review, 61, 66, 151, 241-42, 257, 275-76, 284, 294-95, 310, 323, 328-29, 333, 336
 - operational flexibility, 286, 293
 - permit fees, 60, 69, 292
 - permit shield, 60, 292
 - permits for sources of hazardous air pollutants, 287
 - permits under the acid rain title, 288
 - PSD permits (*see also, new source review*), 58, 62, 205-06, 209,

- 211, 213, 215, 217, 223, 225, 278, 293-98, 337
- EPA veto authority, 60, 292
- tradable permit systems, 18
- photochemical assessment monitoring stations (PAMS), 8, 256
- photochemical oxidants, 13, 74, 95, 100, 140, 230, 413, 459
- point sources, 11, 31, 46-52, 55-56, 90, 120, 215, 249, 258-59, 261
- prevention of significant deterioration (PSD), 55, 58-59, 62-63, 66, 93-94, 116, 171, 176, 203-18, 223-30, 256, 275-84, 293-98, 306, 310, 318, 322-23, 326, 328-34, 336-37, 464
- administrative review, 217
- baseline concentration, 58, 208, 211-12, 253, 256, 331
- baseline date, 171, 211-12, 225
- best available control technology (BACT), 27, 58, 62, 64, 83, 123, 143, 148, 205-06, 214, 216-18, 275, 294, 296-97, 318, 333, 336
- best available retrofit technology (BART), 59, 236, 238, 245-46, 248, 318, 337-38
- increments, 58-59, 204-08, 211, 216, 222, 227, 253, 294, 297-98, 328, 330-32, 334, 339
- integral vistas, 236, 245
- PSD areas, 58-59, 62, 66, 116, 216, 229, 256, 275, 298, 318, 322, 326, 329, 333, 337
- PSD permits, 58, 62, 205-06, 209, 211, 213, 215, 217, 223, 225, 278, 293-98, 337
- potential to emit, 61, 65, 205-07, 216, 224, 282-84, 302-04, 306-11, 320
- top-down, 218
- visibility impairment, 59, 231-32, 235-39, 241-48, 329
- visibility protection, 58-59, 94, 231-41, 243-45, 248, 298
- visibility transport commission, 238-40, 247
- reasonably available control measures (RACM) (*see nonattainment areas*)
- reasonable available control technology (RACT) (*see nonattainment areas*)
- RACT/BACT/LAER Clearinghouse (RBLC), 64, 148
- reactive hydrocarbon, 96-98
- reformulated gasoline (*see fuels and fuel additives*)
- regional haze, 231-46, 248
- Reid vapor pressure (RVP) (*see fuels and fuel additives*)
- science advisory board (SAB), 79, 505, 510
- scrubbers, 11, 31, 61, 169, 247, 270-74, 308, 339-40
- Sofia Protocol, 184
- standard industrial classification (SIC) code, 303-06, 310
- state implementation plans (SIP), 56, 59, 63, 71, 73, 79, 90, 93-95, 100-03, 105-06, 108-10, 113-17, 122-30, 134, 138-42, 144-49, 151-52, 155-59, 162-73, 177, 179, 181-97, 200, 205, 207-11, 231-35, 243, 245-48, 257, 281, 285, 293, 309, 320-22, 328-31, 333-35, 361-62, 365, 372, 374, 376, 382-88, 464, 472, 478
- stationary sources, 4-6, 9, 22, 39, 41, 53, 56-57, 59-64, 66, 68, 71-72, 83, 93-94, 96-98, 100, 102, 122-25, 138, 143, 145-46, 149, 163, 172-73, 185, 195, 204-05, 207, 210, 212-13, 224-25, 236, 238, 241-43, 249, 251, 267-69, 271-72, 275-76, 281, 284-85, 287, 293, 296, 298, 302, 304-07, 309, 318-20, 323, 326, 328-30, 332-34, 336, 351-53, 355-56, 361-62, 367, 370, 374, 376, 378, 380, 382, 384, 465-66, 475
- straight rollback model, 96-97, 100
- stratospheric ozone depletion, 100, 391-93, 501
- significant new alternatives policy (SNAP), 404-05, 408
- sulfur dioxide, 1-2, 9-13, 19, 21, 24-25, 31-32, 58, 66-67, 74-76, 86, 90-91,

102-06, 108-09, 114-16, 118-20,
139, 157-60, 162-63, 166-72, 175-
76, 193-94, 197, 201, 204-05, 208-
11, 216, 222, 230, 232, 237, 241-43,
248-49, 251-55, 257-64, 272-73,
288, 293-95, 297, 332, 337-42, 344-
45, 349, 368-72, 389, 420, 436, 474

tall stacks, 102-08, 193-94

technology-forcing, 40, 111-12, 114, 117,
440

top-down (*see prevention of significant
deterioration*)

total suspended particulate (TSP), 9, 145,
157-58, 162-63

troposphere, 69, 391-92

United Nations Environment Program,
402, 485-87, 499

Vienna Convention for the Protection of
the Ozone Layer, 69, 393-94

visibility protection (*see prevention of
significant deterioration*)

volatile organic compounds (VOCs), 6-8,
22, 56-57, 62, 100, 122-24, 137,
184, 305, 318, 332, 383-84, 407,
458, 460

wood stoves, 25

ISBN 1-4224-1919-3



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